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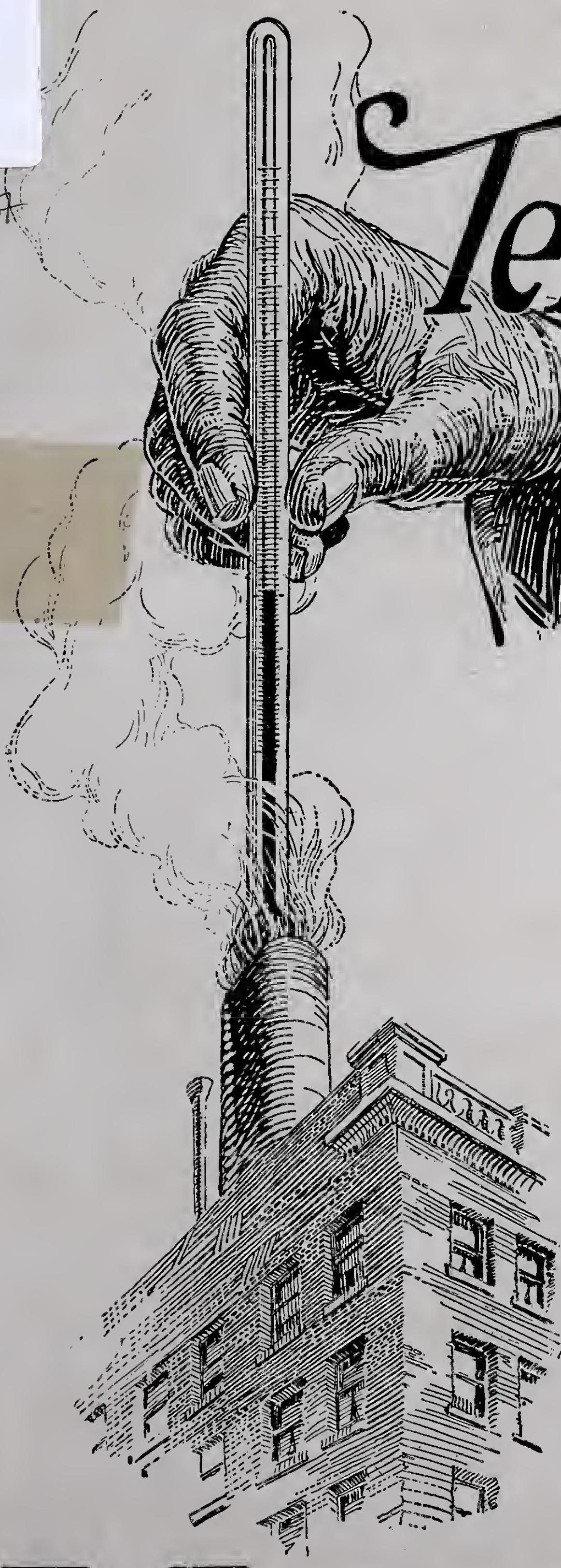

the Temperature of the stack gases

The temperatures of the stack gases tell how much heat a boiler is wasting. ***High*** temperatures mean that too much of the heat the boiler makes gets up the stack ***unused.*** ***Low*** temperatures show that practically all the heat generated, is transferred to the water in the boiler and ***used*** for making steam.

Tests of boilers in actual operation show that the gases come from a Kewanee Boiler many degrees cooler than those from other boilers. Kewanee Boilers ***use*** the heat they make. Hence a smaller coal bill.

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Long-Bell Lumber is made by skilled workmen—men who have been with this company for years and who take a personal interest and a personal pride in a product that bears their company's name.

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—these are some of the reasons why you, too, should buy Long-Bell Trade-Marked Lumber.

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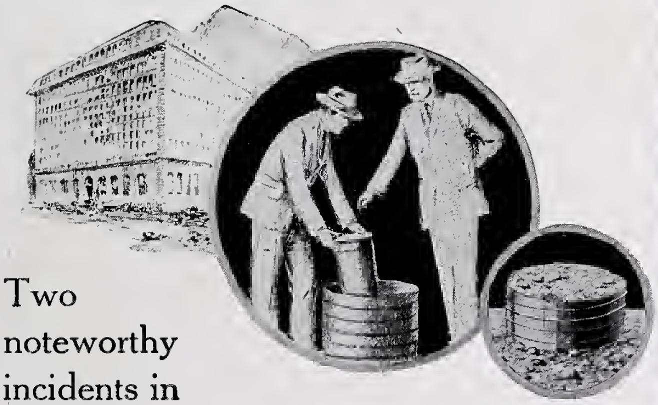
Concrete Piles



Two noteworthy incidents in the foundation work for the Federal Reserve Bank Bldg., Cleveland, O.

First—rather difficult and unusual pile driving. The photo shows an instance in which the top of the driven pile was about 30 feet below where the driver was standing—in fact, at the feet of the man at the bottom of the picture.

Second—a record containing the names of the Architects, Builders, Officers and Committees was enclosed in a hermetically sealed piece of pipe and placed in the center of a Raymond Concrete Pile in the foundation. For this building our contract called for 2,985 Raymond Concrete Piles. Architects: Walker & Weeks, Cleveland. General Contractors: John Gill & Sons, Cleveland.

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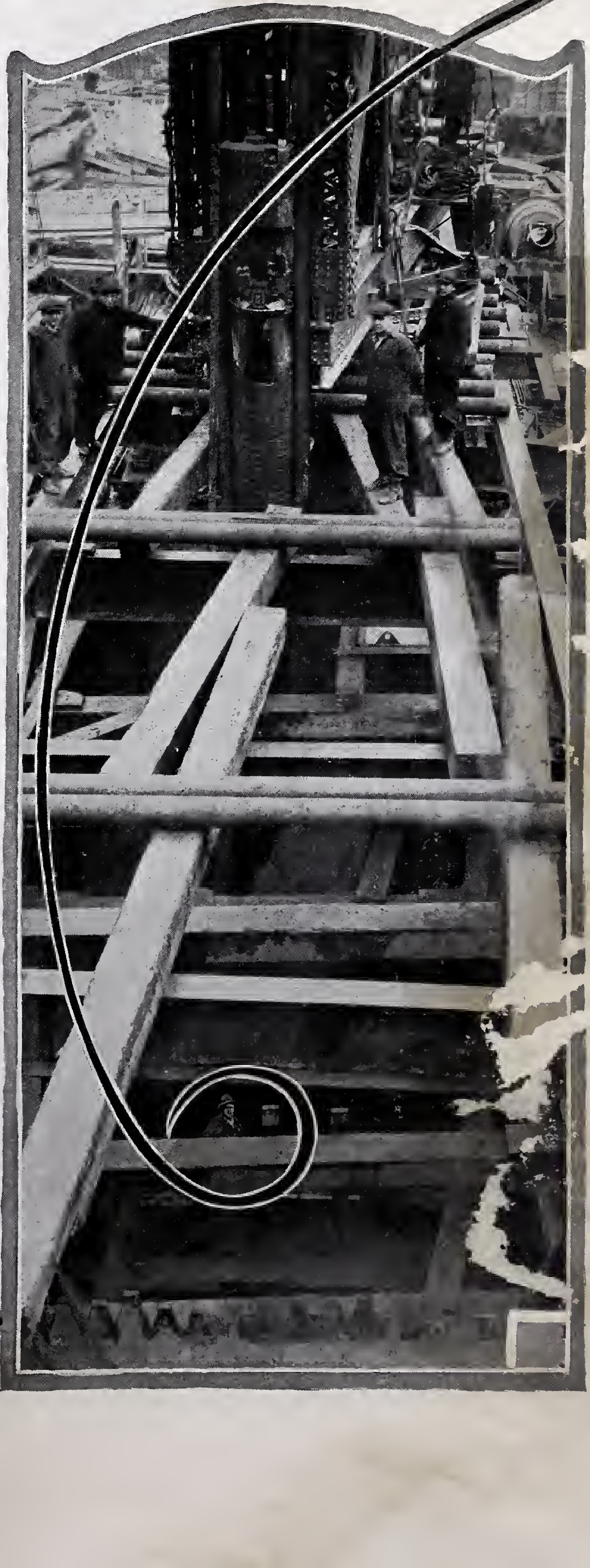

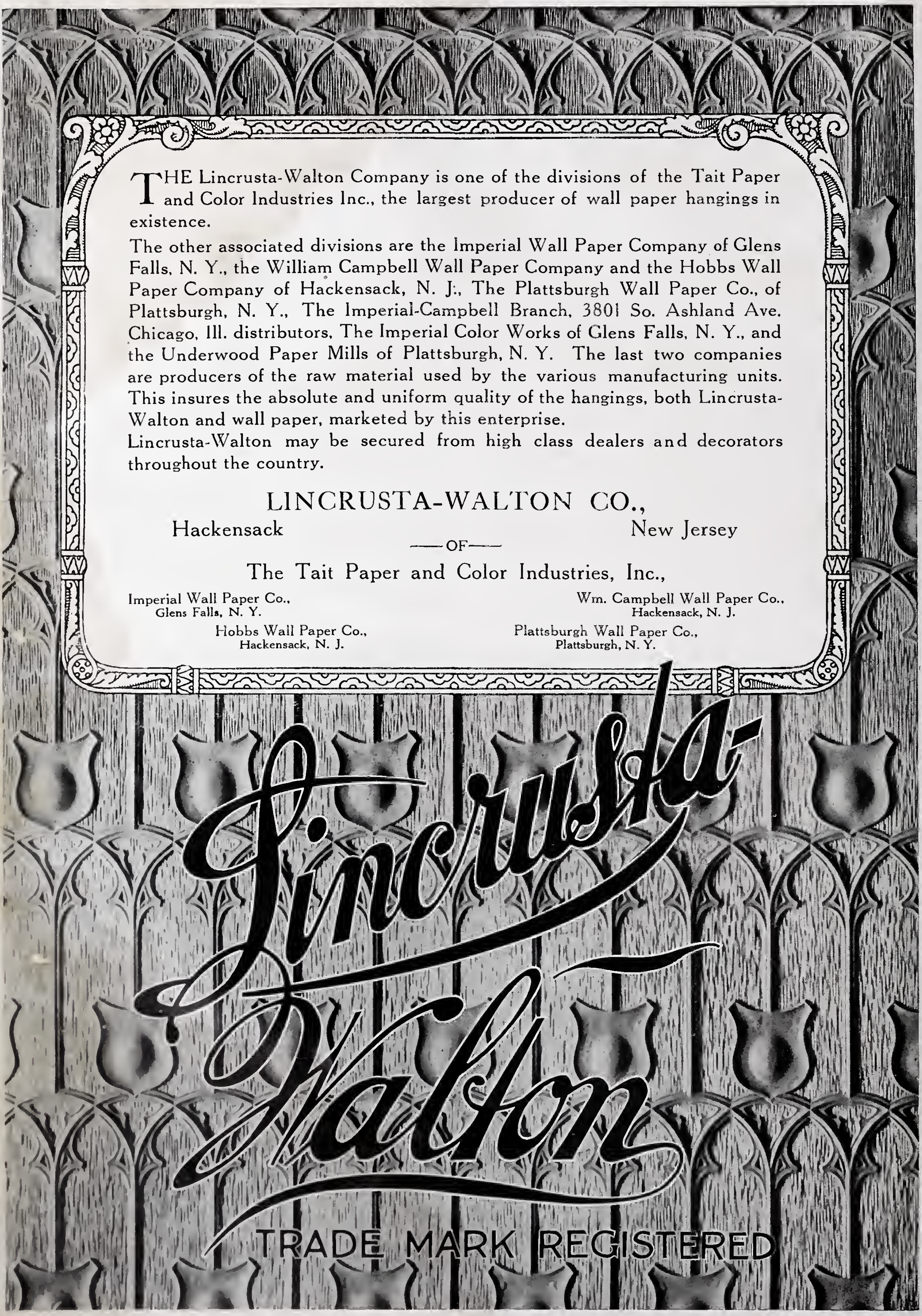

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Plattsburgh, N. Y.

THE AMERICAN ARCHITECT
THE ARCHITECTURAL REVIEW
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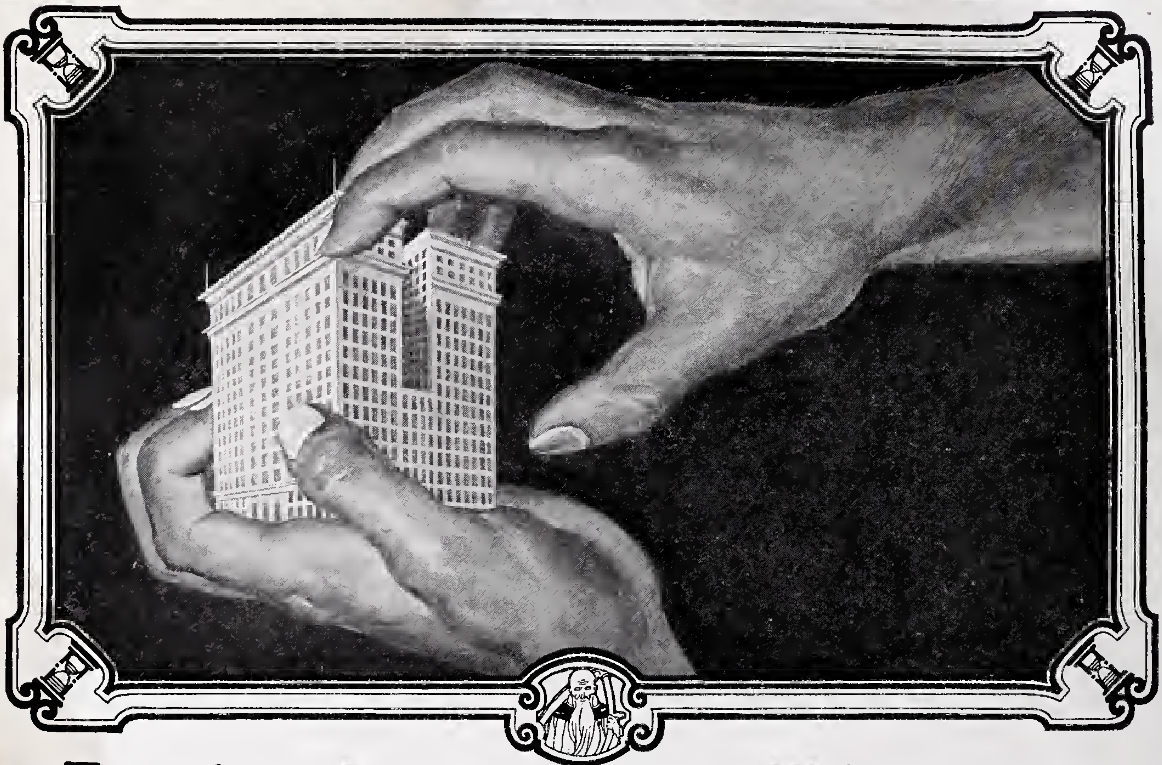

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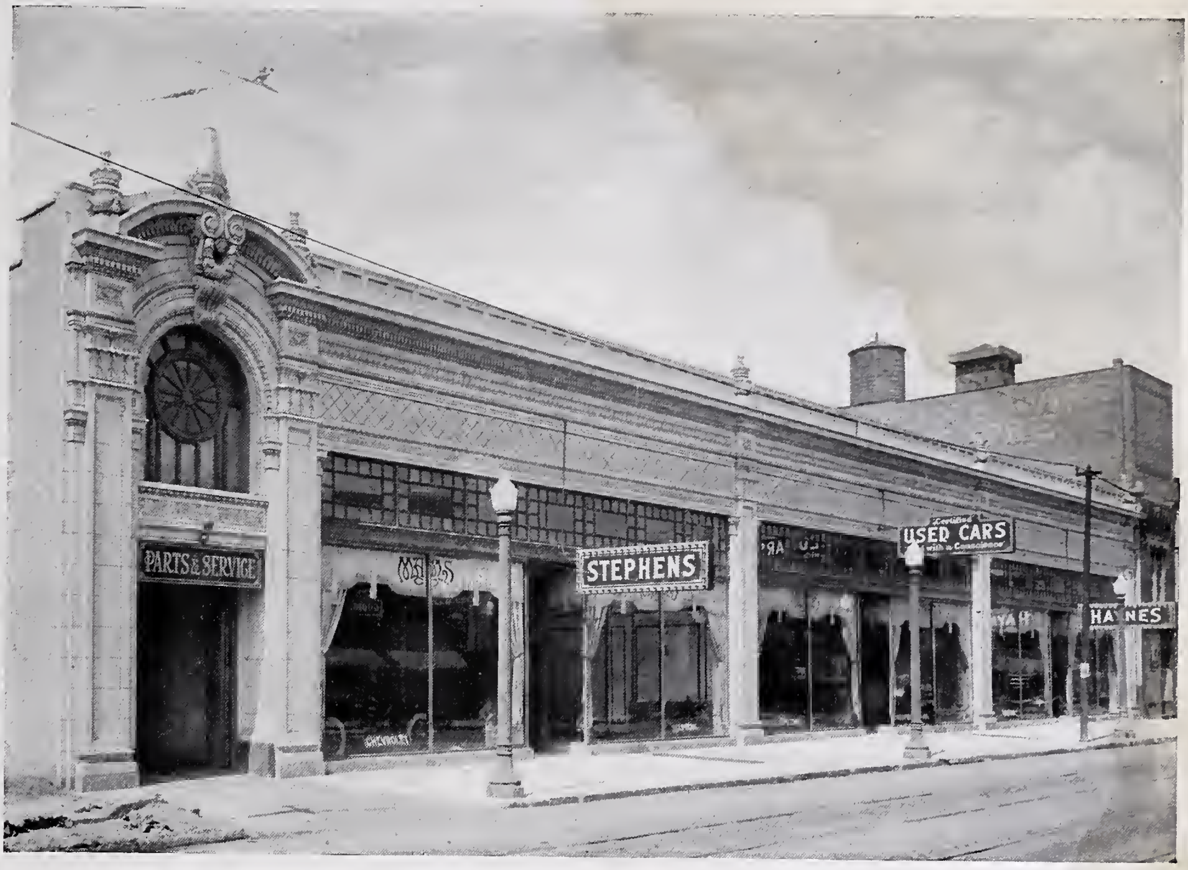

SHOWROOM of the Milwaukee Ave. Motor Sales Co., 2518-28 Milwaukee Ave., Chicago, Illinois. Loewenberg & Loewenberg, Architects. This attractive building is faced with mottled matt glazed Northwestern Terra Cotta.

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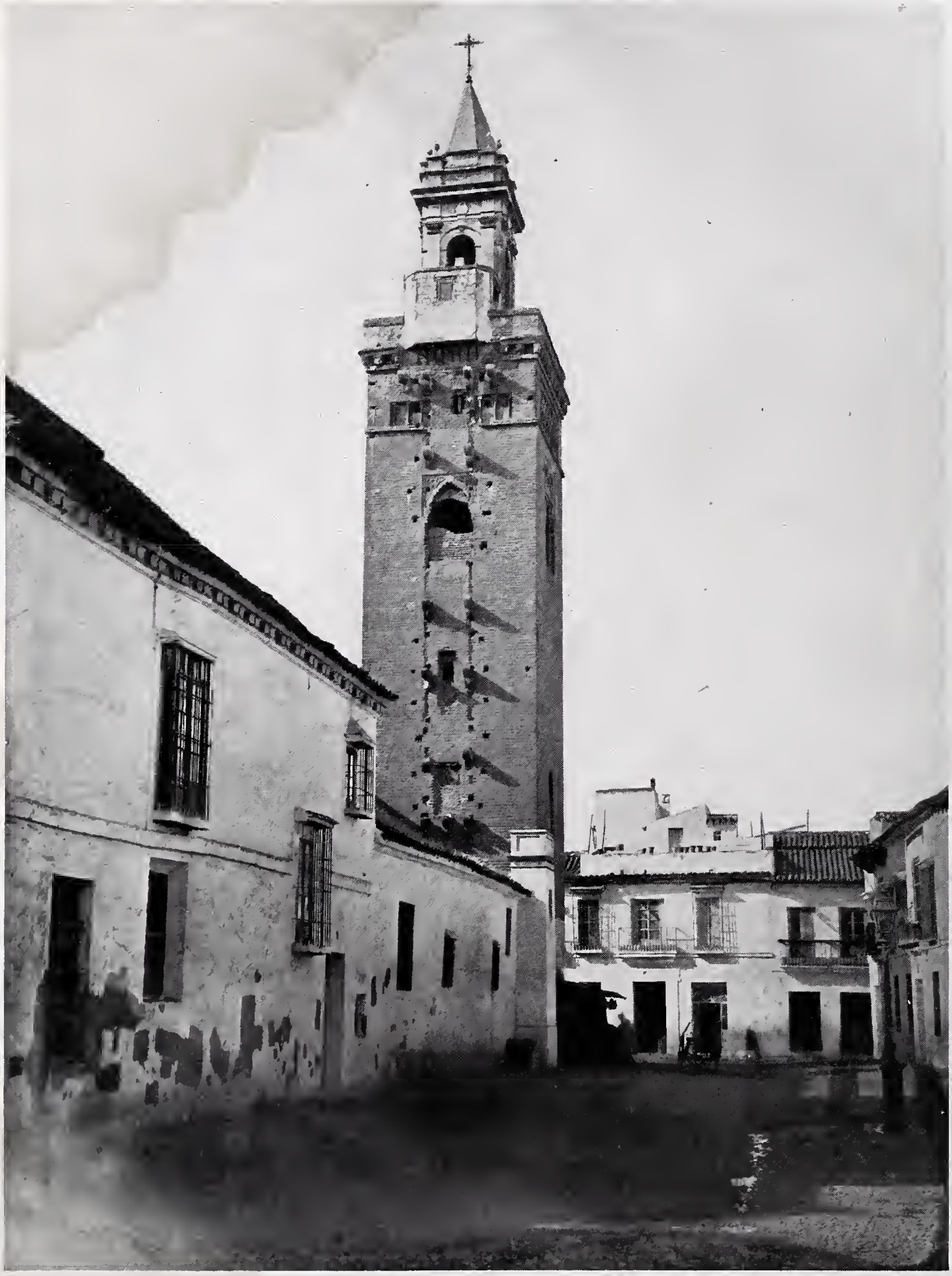
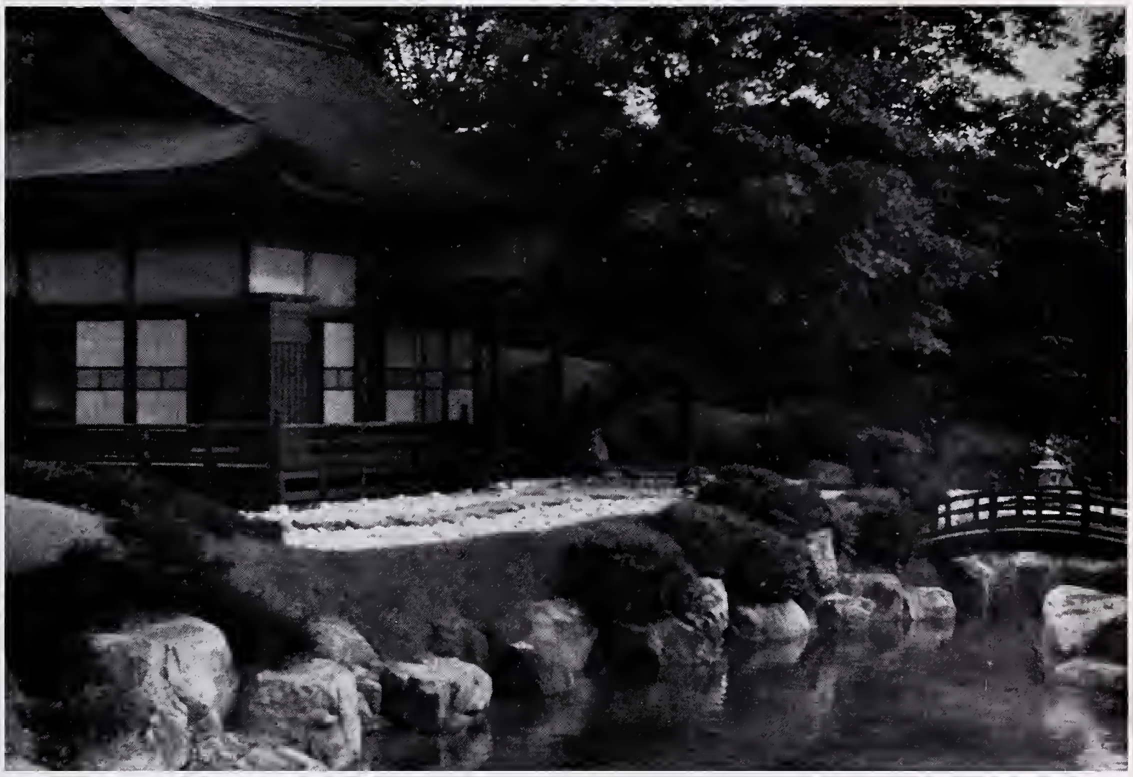


CAMPANILE, CHURCH OF ST. MARK, SEVILLE

THE AMERICAN ARCHITECT
The ARCHITECTURAL REVIEW
VOL. CXXII WEDNESDAY, JULY 5, 1922 NUMBER 2397



Japanese Tea House, Estate of John D. Rockefeller, Esq., Pocantico Hills, N. Y.
Welles Bosworth, Architect

THE RELATION OF CLASSIC EXAMPLE TO ARCHITECTURAL DESIGN

With particular reference to the work of Welles Bosworth, Architect

SOME years ago at the Century Club a number of men were discussing how posterity would judge our treatment of the tall building problem. Two of these men were architects. One, a member of an old and high reputed firm said: "Today we have generally accepted the base and shaft idea, adapted from the column, though the proportion of the building in most cases bears no sort of relation to the proportion of a column. We cite the column to justify the placing of a little architectural treatment at the top as a cap; a little more at the bottom as a base, and no treatment whatever in between and we call it good architecture. But we are too near it in time to judge of its merits as good architecture." The other cited the buildings of antiquity which show the manner in which the ancients would have treated the high building problem. Their eyes met simple temples and the elementary forms of construction. Their light house designs, as restored by Canina from coins, show a sustained decoration of superimposed orders from base to top. Their theatres and amphitheatres also were enriched by superimposed orders, but the most fitting example of high building was the Septizonium in Rome with its seven succeeding orders, one above the other. Built by Septimus Severus on the Southeastern flank of the Capitoline Hill, it was so placed that

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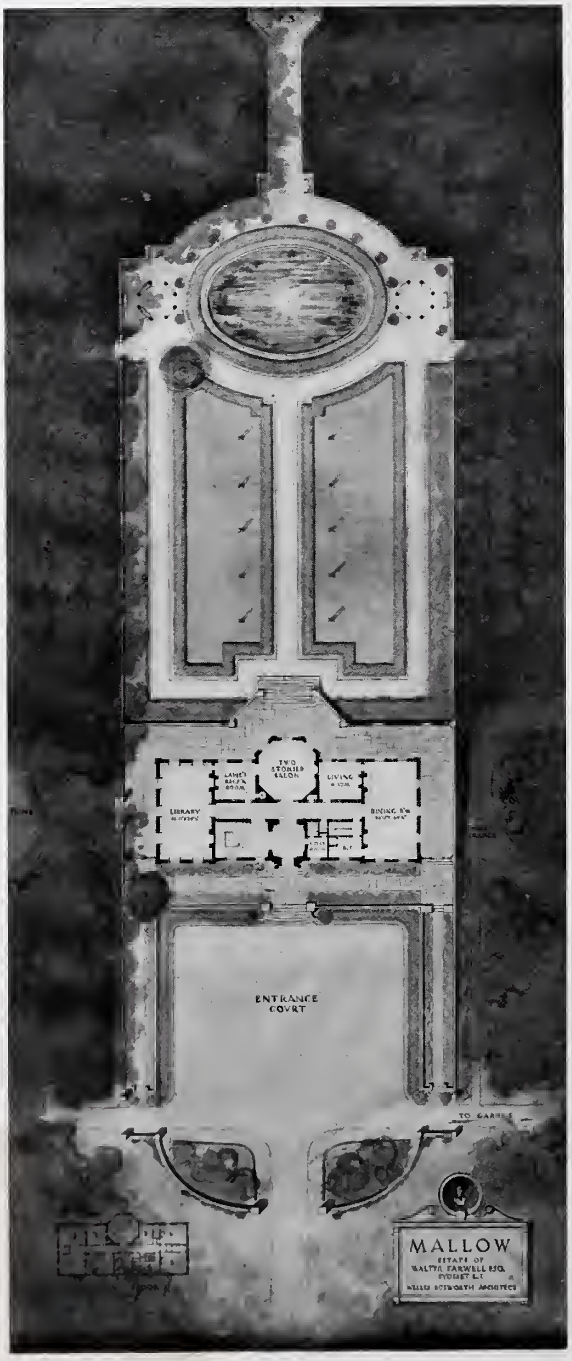
travellers from Africa, the scene of his greatest triumphs, should be impressed by it on entering Rome. It immediately became renowned as one of the "seven wonders" of the ancient world.

The Greeks also placed one order of columns above another, as in the case of the library at Pergamon. In this beautiful example, the lower order is Doric, the upper order Ionic. This motif has furthermore the distinctions of an unusual bay treatment in the upper story; the columns being united with a parapet wall, about one-third their height, which stiffens, in effect, the stability of the columns, while leaving at the same time a sense of lightness in the upper two-thirds of the order. It throws the capitals into relief and gives much grace to the entire structure.



Garden Plan

Estate of Walter Farwell, Esq., Syosset, Long Island, N. Y.

Welles Bosworth, Architect

The need for a central office building in New York of the Western Union Telegraph Co. and the American Telephone and Telegraph Co., which at that time were united, under the management of the great administrator, Theodore N. Vail, offered a fitting opportunity for this Septizonium motive.

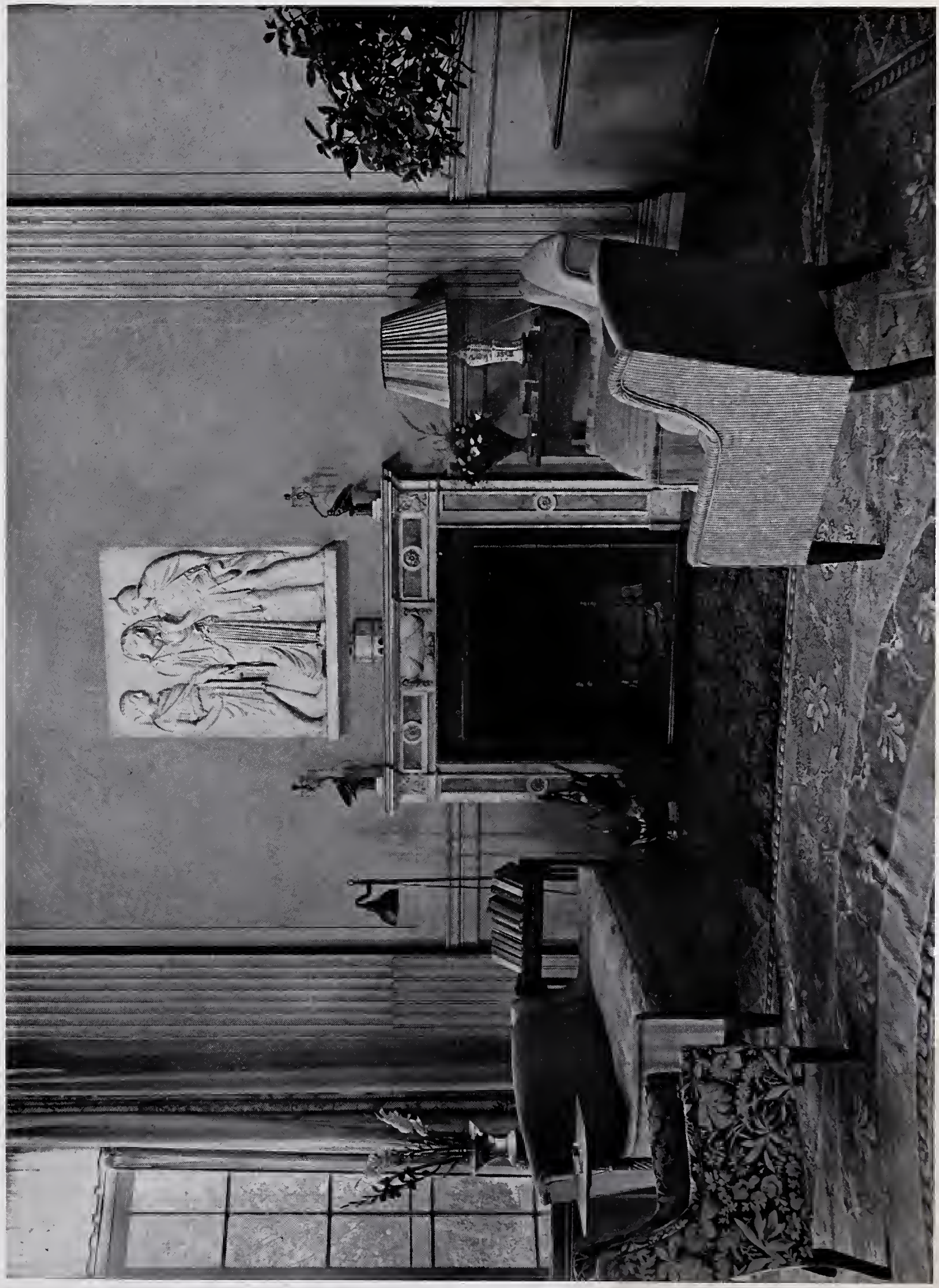
As in the matter of style, so with the materials of which the structure is built; both stand for permanency inside and out. The whitest granite was chosen for the exterior, and Istrian marble for the interior lobby, with a beautiful creamy Alabama marble for the lining and mosaic of the corridors. All the details were specially designed for the building; the bronze push buttons for the elevator signals, the door knobs, and even the keys whose broad ends are fashioned in the form of a Greek shield, agreeable to the touch, instead of being ornamental with the name of the makers. There are no manufacturers' names to be seen anywhere in the building, not even in the elevators. It is a relief to the tired brain, not to be forced to read lettering on all the fixtures, as has been so universally customary in this country.

The new lobby will be used on the Fulton Street side for banking purposes by the Telephone Co. as the Dey Street side is now used by the Western Union Co. The intermediate space will serve for general circulation. The aisles between the heavy marble columns which form a veritable Hypostyle Hall, of great simplicity, dignity and beauty lead West to the elevators facing both side street entrances.

The National City Bank on Wall Street with all its member columns balanced rythmically one above the other offers another excellent example of organization.

The Tiffany store on Fifth Avenue is also a case of beauty and impressiveness obtained by superposition of orders.

The Telephone and Telegraph Building with its mounting heights of stories of white Greek Ionic columns rising above the sturdy Doric order as in the library at Pergamon, is full of dignity and rythmic beauty. There are those who argue that the essential expression of a steel framed structure is one of vertical lines. There are others who contend the contrary, that the floor beams being heavier count more solidly in the horizontal sense; interrupting the uprights at each story level, so that with their windbracing, the dominating effect is more one of posts and lintels as in classic architecture, than of the vertical shaftings of Gothic. Either line of argument is defensible; the result is great variety in our architecture. The Woolworth Building, as seen from the favorite point of view under the arch of



FIREPLACE IN OCTAGONAL MUSIC ROOM IN HOUSE OF WALTER FARWELL, ESQ., SYOSSET, LONG ISLAND, N. Y.

WELLES BOSWORTH, ARCHITECT

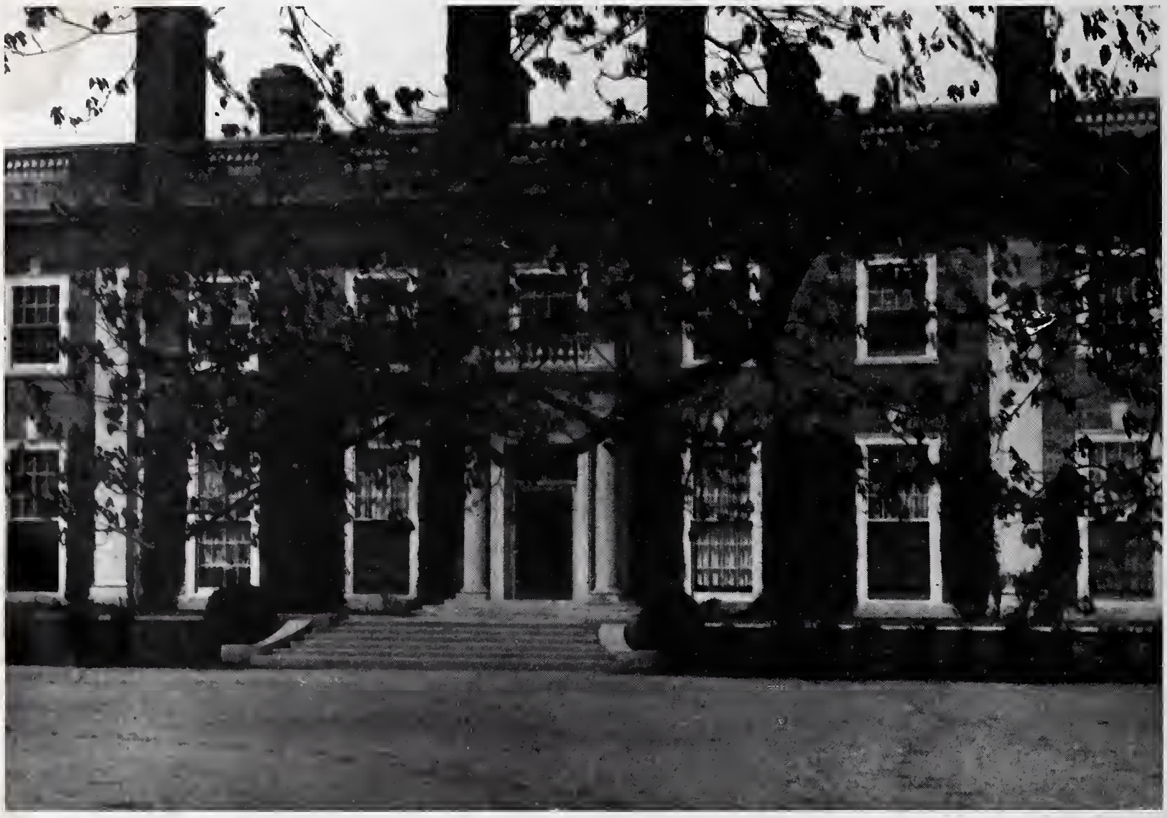
the Municipal Building, seems to rise out of the roof of the Old City Hall. This is a shock to some sensibilities, but a joy to others.

STANFORD WHITE used to say "All good things go together." Let us take comfort and enjoy what we can of the mêlee of periods and styles about us. Certain it is that if any style has a right to our allegiance, it is the Graeco-Roman, the origin of our early American tradition. The Gothic revival in all its phases from Harvard's Memorial Hall of pristine Victorian viciousness, to the Woolworth Building vestibule, comes to us as a voice from Mediævalism in sharp contrast with fair classic forms.

The trend of Gothic form drawing upward to its pinnacles, expresses the aspiration of the religious soul, or as Jay Hambidge puts it "In Gothic art all the movement of composition works from the center, outward, in emotional searchings; whereas in the Greek and Egyptian styles the outlying limits form the basis from which the center and other axis lines are established." This method produces inevitably greater repose though less romance. We are fortunate in living in an epoch when all styles are accepted and the owner following his caprice is certain to find some ardent partisans.

At any rate, it is fairly well established that the Greek style is likely to outlive all the others. In every epoch since its rediscovery by Stuart and Revett, it has come forward with fresh honor. The Greek revival in America, just at the moment when its prosperity made dignified and durable buildings a possibility, associates for all time the Greek style with this country. It is found from Salem to Salt Lake City, from Portland to Savannah—in every type of structure; from wharf-houses, custom houses, jails and court houses, to churches and private residences, both in cities and the country.

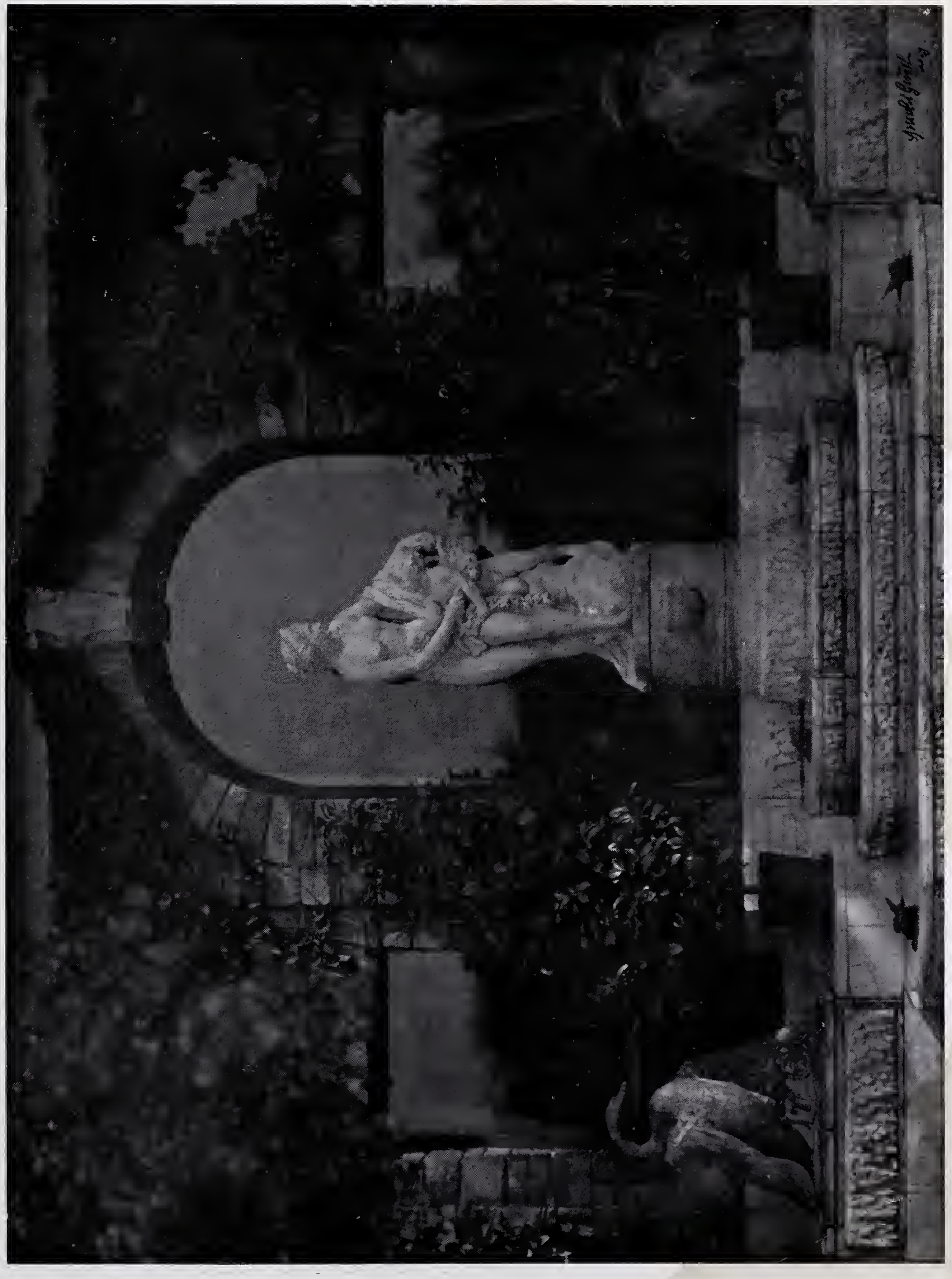
The grand old Sub-Treasury still stands on the corner of Broad and Wall Streets with Ward's splendid statue of the "Father of His Country" on its steps; and so long as this image remains before the eye of the active business center of the country, the Greek style of architecture will be identified with the early days of its national life.



House of Walter Farwell, Esq., Syosset, Long Island, N. Y.
Welles Bosworth, Architect
Entrance Courtyard and main façade. See text for description

INFLUENCED by these ideas, the officers of the Telephone and Telegraph Companies decided to adopt the Greek style for their great headquarters building.

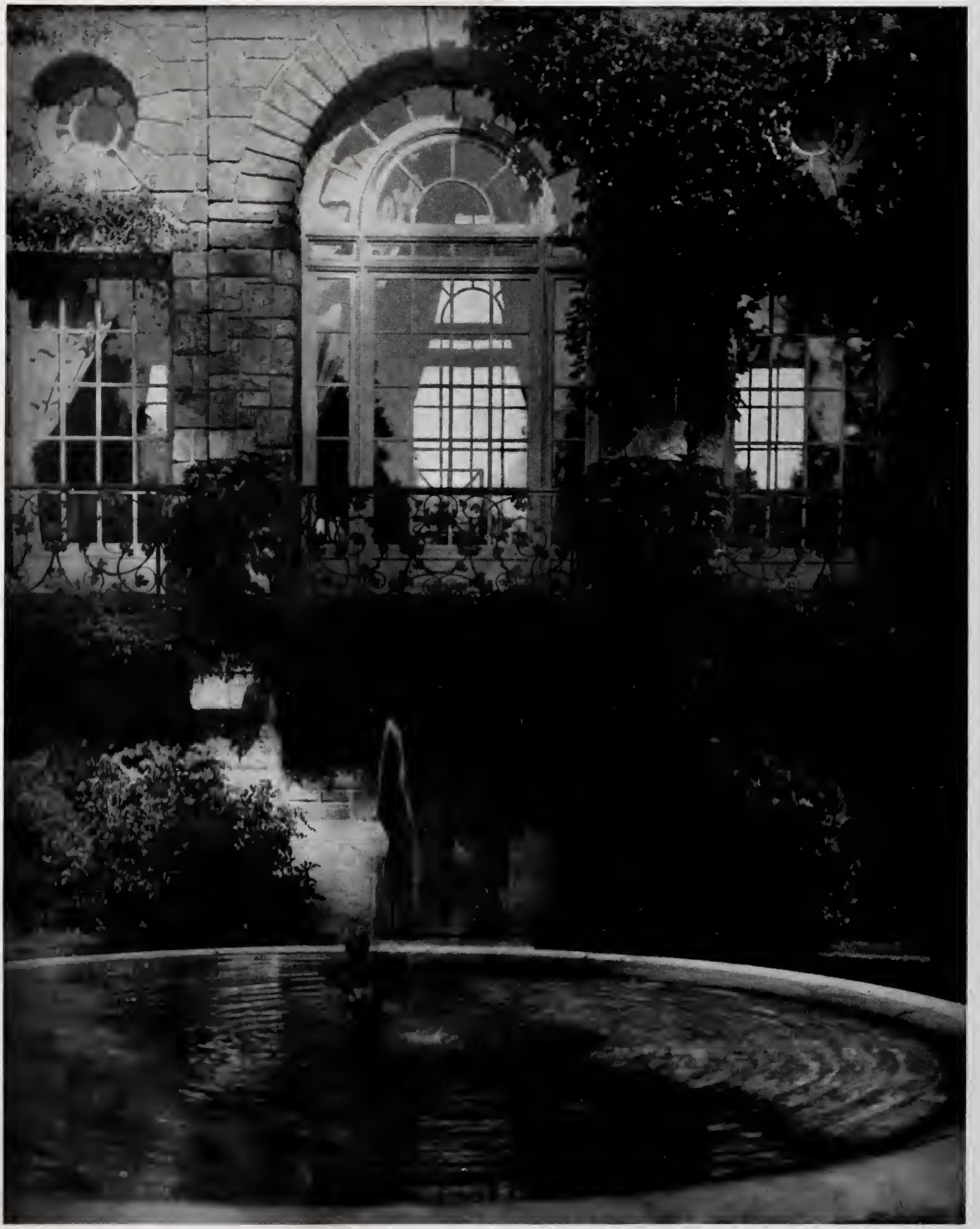
There will be four entrances on Broadway; Paul Manship's well known panels representing the four elements are to mark them. Very little work by the best sculptors is to be found in the lower part



FOUNTAIN GROUP BY PAJOU

GARDENS OF JOHN D. ROCKEFELLER, ESQ., POCANTICO HILLS, N. Y.

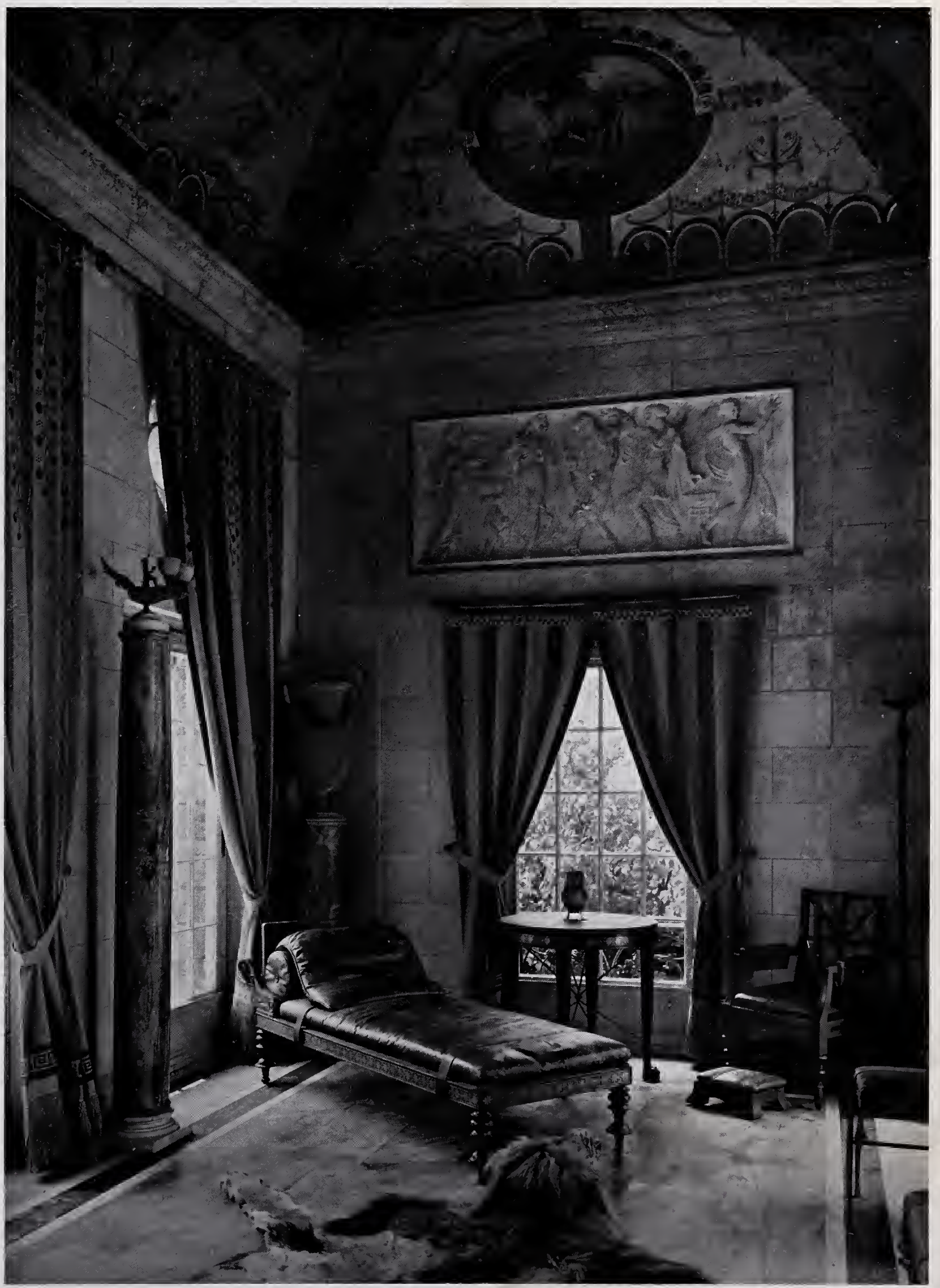
WELLES BOSWORTH, ARCHITECT



TEA HOUSE AND FOUNTAIN POOL

ESTATE OF JOHN D. ROCKEFELLER, ESQ., POCANTICO HILLS, N. Y.

WELLES BOSWORTH, ARCHITECT



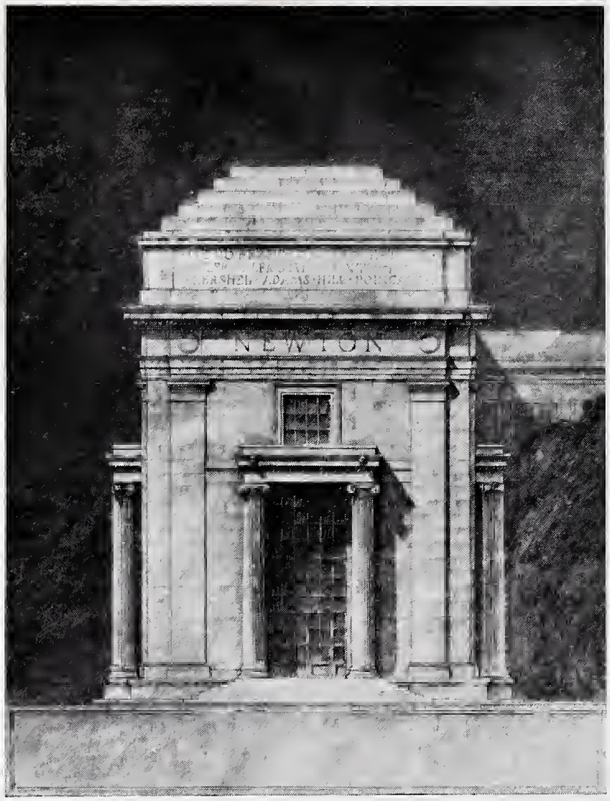
VIEW IN INTERIOR OF TEA HOUSE IN THE GARDENS OF
JOHN D. ROCKEFELLER, ESQ., POCANTICO HILLS, N. Y.
WELLES BOSWORTH, ARCHITECT

of the city, and especially is this true of cases where they may be studied near the street level. Sky line sculpture is attractive and a natural crown to architecture, (note for instance the figure of electricity on the Fulton Street tower of this big building, often spoken of as the best terminal figure in this country) but a glance is all that is given to a sky line, whereas sculpture within easy range of one's vision is much more easily appreciated.

The attic story of the Telephone and Telegraph Building frames the groups of orders below into a harmonious ensemble. One admires the restraint exercised in keeping this simple wall space free from windows, and it speaks volumes for the appreciation of beauty on the part of those responsible that none were allowed there. As a matter of fact, there are squash courts and open air playground spaces behind this wall for the recreation of the employees. Their welfare and happiness are provided for in many ways in this remarkable building; even a special hospital for the general dispensary treatment where minor operations are performed as well, and restaurants, rest rooms for men and for women, soda fountain and quick lunch counters and a large lecture hall for movies are some of the varied service features.

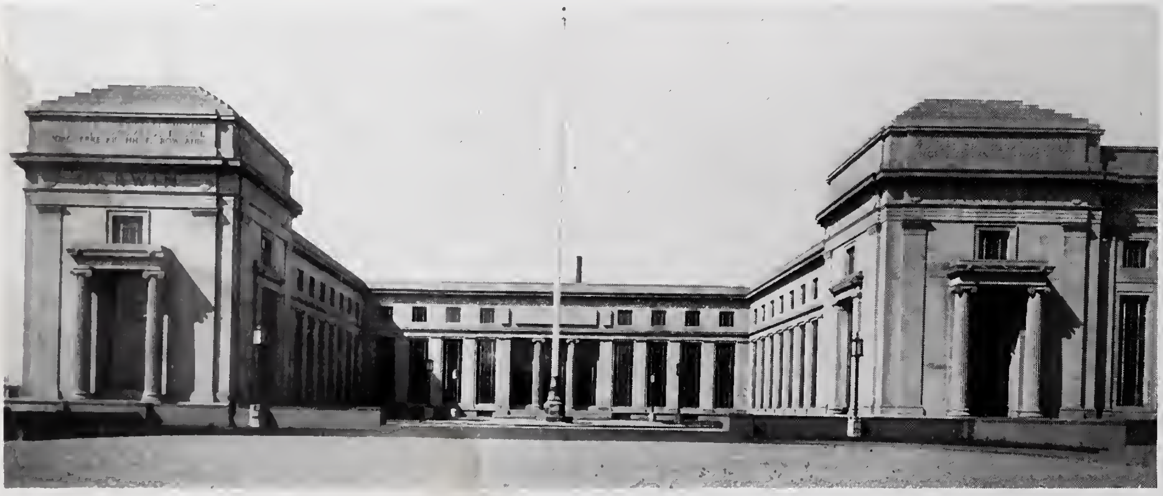
The officers' quarters are of extreme simplicity, though done with fine feeling in all the details, panelling, fireplaces, special furnishings, and electric fixtures. The machinery and mechanical equipment basements are models of their kinds.

One sees no name placarded on the exterior of this building. It needs none. Its distinction gives it individuality, its noble quality needs no praise.



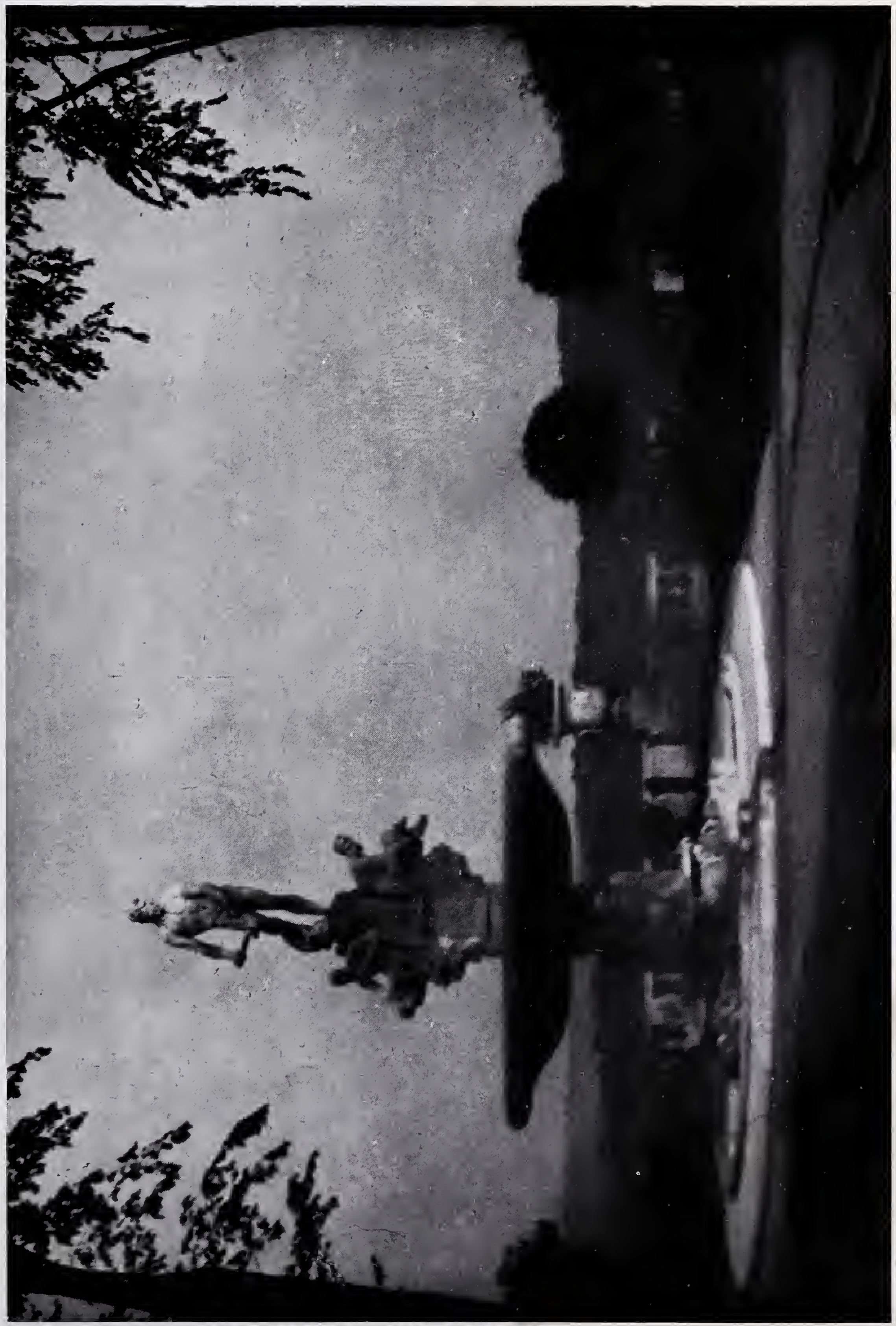
An example of the influence on building during the war period
One of a series of pavilions as designed for the Massachusetts Institute of Technology

THE house of Mr. and Mrs. Walter Farwell at Syosset, Long Island, stands on a level piece of ground surrounded on all sides with wooded slopes—those at the South from which the house is approached are higher than the fore-



The pavilions at Massachusetts Institute of Technology as completed

This is one of the deprivations or depradations of the War on an American building. Finished during the worst of the War period, when a drive was on for an endowment fund to increase the salaries of the teachers, the Institute authorities felt it was impossible to appropriate a dollar to buildings which could be avoided—so these flanking porticos were omitted to save the cost. Fortunately it is not too late to add them on



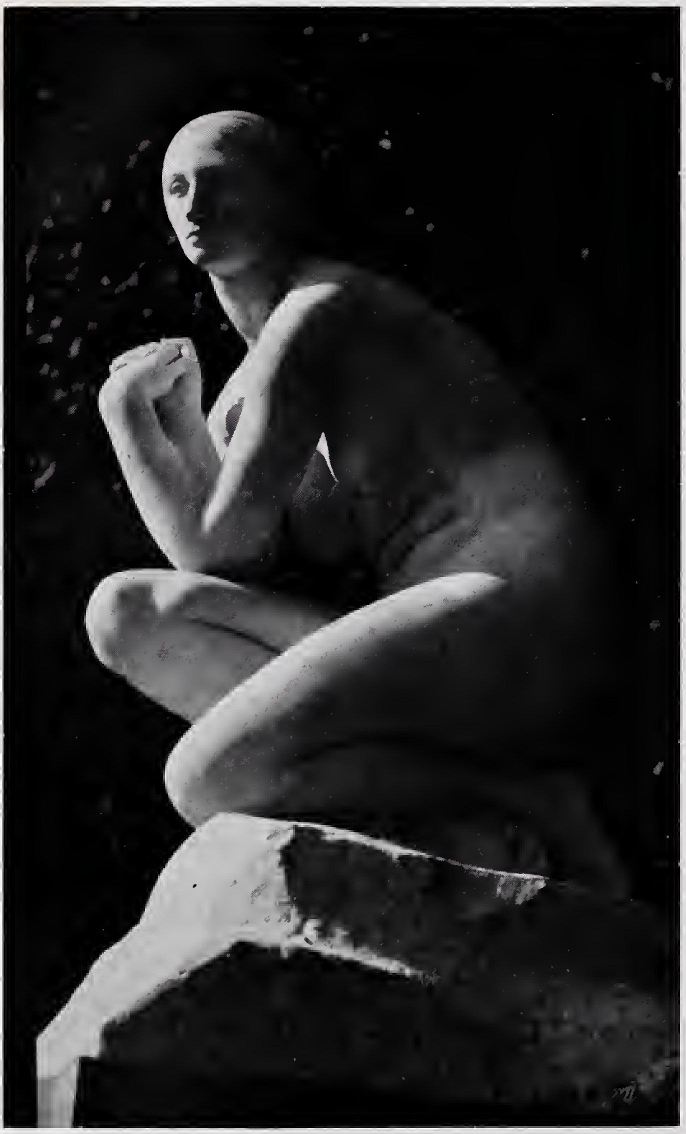
FOUNTAIN IN FORECOURT OF GARDENS ON ESTATE OF JOHN D. ROCKEFELLER, ESQ., POCANTICO HILLS, N. Y.

WELLES BOSWORTH, ARCHITECT

REPRODUCED BY ROMANELLI, SCULPTOR, FROM ORIGINAL BY JOHN OF BOLOGNA court level, the woods at the West are level with the house, while to the North and East the ground drops away in billowy tree tops of oak pierced with beautiful native cedars in great abundance. The dominant particularity of this stately mansion is the fact that it is perfectly and completely symmetrical. There is no servants' wing. The suppression of this inevitable feature in American country houses has been so skillfully accomplished that at first glance one quite forgets to note the fact. Here, the house stands on a paved terrace between the forecourt walls. The kitchen and service entrance are wholly out of sight under the terrace at the East where the ground level is a story lower, thus giving abundant light in both kitchen and laundry windows.

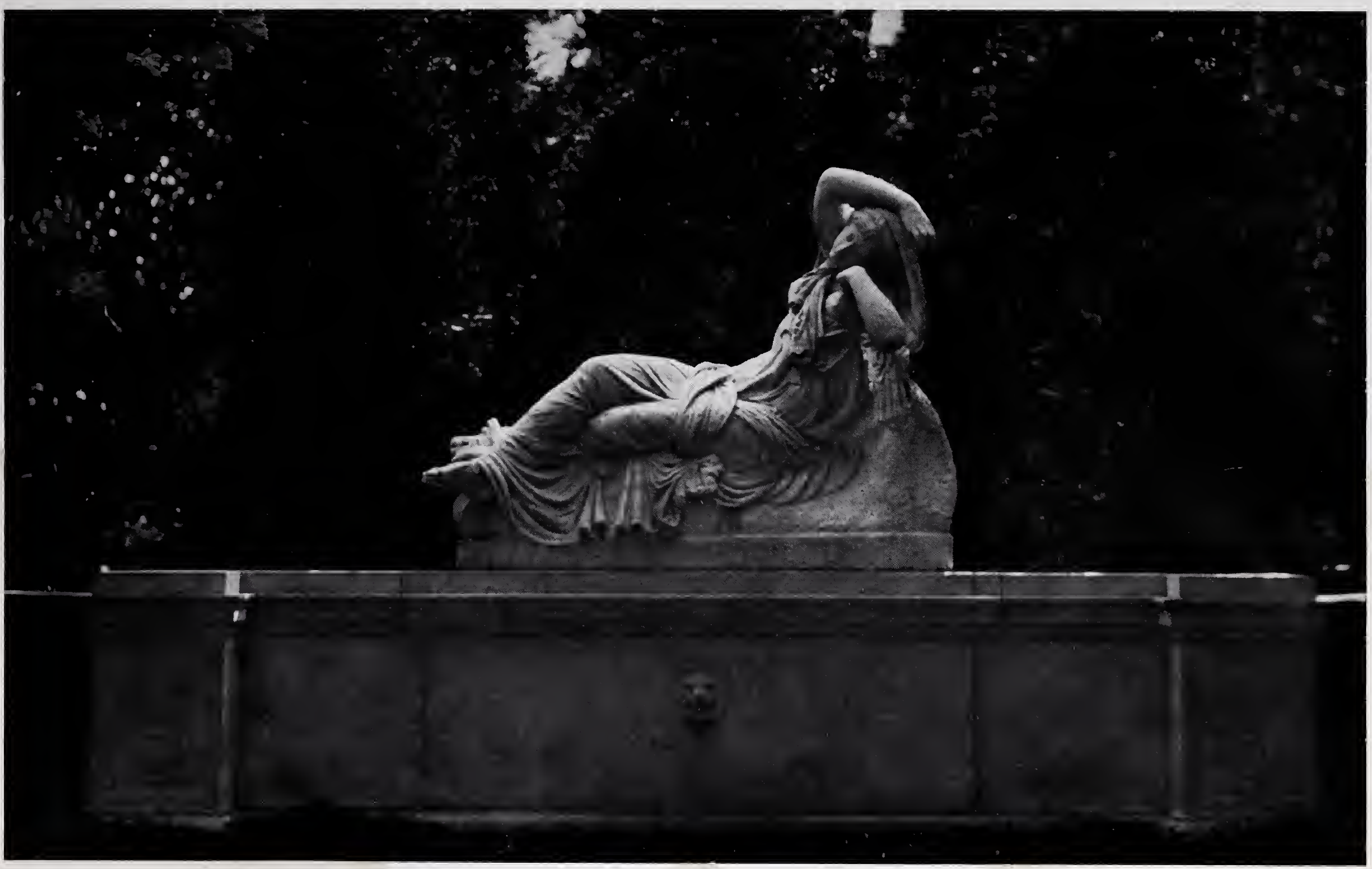
The dining room is served, as in city houses, by a dumbwaiter to the butler's pantry above. Thus the house has its vistas unobstructed in all directions. A true *"Maison de Plaisance."* Gaston Redon, Mr. Bosworth's patron in the Beaux-Arts, always advised his students to read a program at first to see how many things may be put either in the basement or the attic, thus freeing the first floor. Mr. Bosworth has done it in this case. Rarely has so simple a plan been seen for a country house.

There are two axes only. From the entrance vestibule the eye is led out across the music room to the garden parterre beyond, and a Chinese pagoda overhanging the trees of the ravine to the North. At West and East a vaulted corridor with marble floor leads from the dining hall to the library. Both of these rooms are of splendid proportions, and though the windows are very large they seem in perfect scale. A reception and coat room are at the right of the entrance, an *"escalier a la francaise"* at the left, a writing room or ladies' salon, (in black with Chinese screens set in the wall), is at the West of the music room, and a small library or living room opposite on the side towards the dining room, which is served from an adjoining butler's pantry and service stair, completes the plan of the main floor. The octagonal music room goes through two stories with a flat dome above. This feature surprises and delights the visitor. Following through the vaulted vestibule and corridor the high dome forms a satisfying climax. The wall and ceiling decorations of the library were frankly inspired by "Sion House" though the antique marble mantels were purchased by Mrs. Farwell in Dublin as was also much of the furniture. The architecture of the dining room is more "early American" than that of the library and resembles the Doric order of pilasters and cornice in Independence Hall at Philadelphia. The antique staircase is somewhat light for the spacious hall enclosing it, but it possesses that quality of charm which can only be obtained, it seems, by thus installing old features in our new houses. They breathe the air of romance and the sentiment of foreign lands, as does some fragrant odor. Mere form and color can seldom do this, when they are fresh and new. Small wonder is it that the owner and the architect sacrificed a point of scale for the greater quality to be obtained by using this quaint old carved oak balustrade from England.



"Woman," by George Grey Barnard, Sculptor, in Gardens of Estate of John D. Rockefeller, Esq., Pocantico Hills, N. Y.

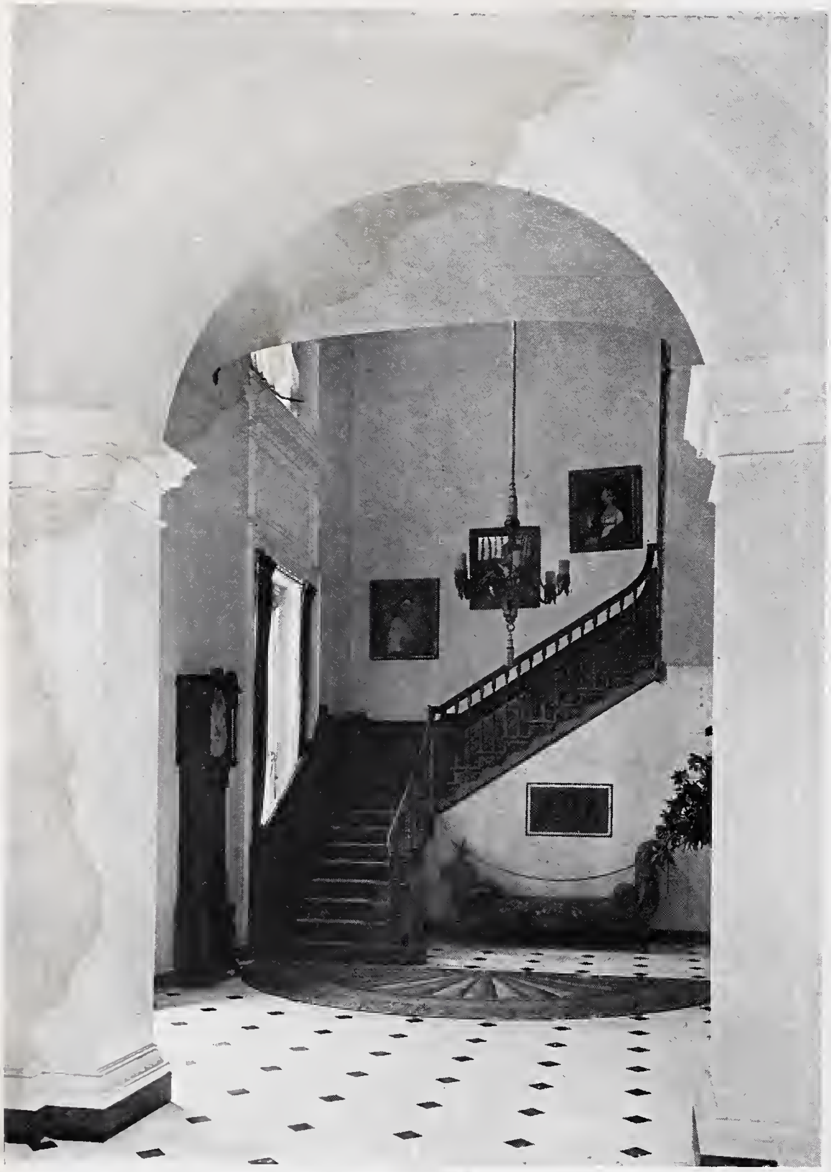
The style of the exterior has been described as



THE SLEEPING ARIADNE

DETAIL IN GARDENS OF JOHN D. ROCKEFELLER, ESQ., POCANTICO HILLS, N. Y.

REPRODUCTION BY FREDERICK G. M. ROTH, SCULPTOR ——— WELLES BOSWORTH, ARCHITECT



View of the Antique Stairway, brought from England, and placed in house of Walter Farwell, Esq., Syosset, Long Island, N. Y.
Welles Bosworth, Architect

the work of an English gentlemen of the late Gregorian period who had travelled extensively in France and Italy. Limestone pilasters frame the end projections and carry a limestone cornice and balustrade. The central doorway, of Doric purity is also of limestone. The balustrade and high brick parapet cover the attic story of servants' rooms. This story, much smaller in plan than the one below, sets back from the parapet wall leaving a wide space for light and air and a promenade or out-door sitting space for the servants, thus completely isolating them and the noise of their voices.

The house walls are of old Colonial brick brought from Virginia. The buildings on the Breckenidge farm from which they came were said to have been built by Jefferson. These bricks have an astonishingly beautiful variety of soft colors in pastel shades of pink, lavender and pearly grey and amply justify the trouble and expense of their transportation. The house is rectangular in plan, measuring, 48′-0″ in width by 122′-0″ in length; the terrace is 15′ wide and the forecourt a simple gravel space for turning and backing of automobiles is approximately 110′ by 90′. The drive leading to the garage turns out of this court to the East so that empty vehicles do not return by the same route by which they came—this according to the best old French tradition. The main floor is 16′-0″ from finished first floor to finished second floor, the second floor is 11′-6″ from finished second floor to finished third floor. Simple, dignified, spacious, elegant. Situated in a park of 160 acres of beautifully wooded land with dependencies of farm buildings, a gardener's house, garages, etc., this estate is certainly one of the most, if not, as many people call it, "quite the most perfect country home in America."

THE "Ocean Cable Building" on Broad Street was built on leased land, and was restricted in height by the owners to allow light and air in the Johnson Building, to the East, but the architect has found a treatment of this little façade at once individual, notable and characterful. It is light, yet strong; the architecture is simple yet rich. Standing as it does on a small lot surrounded by tall and imposing buildings, it announces itself even from Wall Street with a gentle yet insistent modesty, appropriate to the fact that its services require that all the world should note both it and its location. The panel beneath the central window bears sections of the first Atlantic cables, and an inscription giving the dates of their laying, with a pretty decoration of shells, waves and sea horses by the sculptor, Emil Siebern. Greek Doric in style, this edifice reflects with becoming grace the front of the old Sub-Treasury building on Wall Street, toward which it looks and to which it is evidently a near relative.

(Continued on page 20)

·EDITORIAL·COMMENT·

THE REPORT OF the Committee on Education to the fifty-fifth annual convention of the Institute, like previous reports on this very vital matter, is a scholarly and well written document.

It is gratifying to learn that the investigations of the Committee show that the conditions surrounding architectural education in this country generally have materially improved. There is evidently a strong desire on the part of those who have this important subject at heart, to study carefully every proposal that is presented and to apply such thoughtful research to the best ends.

The Committee is strongly of the opinion that it is only the exceptional graduate who at graduation is fit to practice architecture as a principal. And it states its belief that experience in an office is as essential to the architect as hospital experience is to the doctor. Just why it should have ever been thought that the architectural student might upon graduation be competent to practice his profession in its commanding aspects, it is difficult to understand.

The graduates at West Point and Annapolis graduate to the lowest commissioned rank and must serve through successive grades before they are given a command. No profession or craft considers its graduate students qualified to assume high responsibilities until they have had years of experience.

Experience in an office is highly essential, and this recommendation of the Committee will, if followed, insure the most satisfactory results. Offices are logically post-graduate schools of architecture. This being true, there devolves upon every practicing architect the realization of a duty, to see to it that the young man who comes to him from an architectural school, fired with great ambitions and high ideals, shall find exactly the proper guidance and instruction to carry him uninterruptedly on to the goal for which he strives.

Recently attention has been drawn to a large architectural office where young men have been trained and guided correctly. The roster of the men coming out of that office is the list of men who today rank highest in the profession of architecture. A similar attitude generally throughout the profession is a solemn duty. It is the highest development of paternalism, and the most satisfying effort that an architect can make.

* * *

RESULTS OF THE EXHIBITION of American architecture in France and England are far beyond expectations. That these results were greatly forwarded by the presence in Europe, during the period of the exhibition, of American architects high in the profession may not be questioned. So greatly appreciated was this collection of American work by our professional brethren in Europe that requests from many cities were made for the loan of the exhibit. The artistic press of Europe, without exception, warmly commended the work as setting the highest examples in architectural design. Distinguished architects in their addresses before the R. I. B. A. and the French architectural societies, were unstinted in praise.

It is, of course, proper that we should with modesty receive these fine expressions of approval of our architectural advancement, but it is difficult to refrain from a feeling of deep satisfaction, as the men who have acclaimed our excellence are, by reason of their high standing in their own country, the most competent of critics.

It would be a splendid exchange of courtesy to invite from Europe an exhibition similar in character to that of our own. While the Institute has yet to perfect its building plans for the Octagon, and has no place sufficiently large to house what would undoubtedly be a large exhibition, we have here in New York the Vanderbilt Galleries, and on those spacious walls an exhibition could be hung under the auspices of the Institute, that would be something very much worth while. As a part of the usual dignified exhibition of the Architectural League of New York, it would attract the largest attendance and have the utmost educational advantage.

* * *

THE SUBJECT OF WIRING for light and power in dwellings is one that assumes additional importance day by day. The series of articles in THE AMERICAN ARCHITECT, of which the concluding article appears in this issue, have been not a plea for more wiring but an exposition of what people today demand in the way of electrical service. A drive is on throughout the country to introduce electrical utilities large and small, the effect being to make the item of wiring fully as important as the items of foundations, walls and roofs, the indispensables which one expects as a matter of course in all houses. Electrical ranges are ideal for small kitchens for they radiate no heat and the cost of operation compares favorably with gas. Electrical refrigerators are in common use and electrical heating is no longer a small reflector sending a shaft or radiant heat through a room, but is an efficient apparatus capable of heating satisfactorily an ordinary room. Architects who fail to advise clients to provide an average of three outlets per room with a minimum of two outlets in any room, as well as a power circuit in addition to lighting circuits, will some day be reproached for lack of foresight.

* * *

STRUCTURAL DESIGNING HAS a literature so vast that one would think there is nothing more to be said. In this issue the first installment of an article on simplified methods of design will attract attention because of the obvious accuracy and common sense of the methods presented. Obtaining stresses by means of measured deflections in models is especially applicable to reinforced concrete because of the monolithic character of structures in this material. The assembling of frames of wood and frames of steel makes it necessary to form joints and the designer has at all times full control of permissible stresses. The assemblage however of parts of a reinforced concrete frame is a casting operation. The structure must act as a whole and no provision can be made for joints where stresses must end. Every applied force sets up interior forces, the effects of which are felt in lessening degree to the furthermost connections and parts.

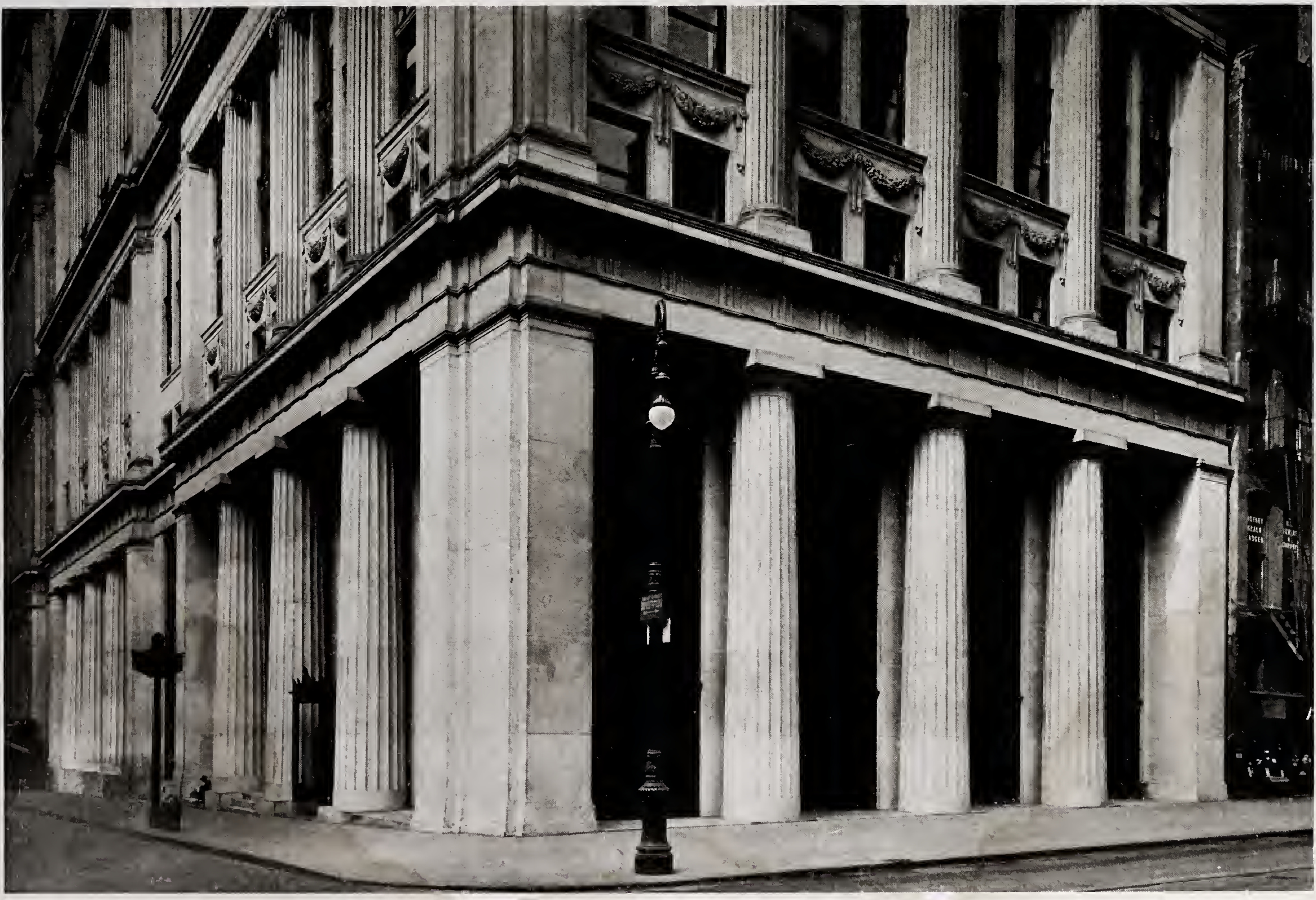
A question arises as to the accuracy of stress determinations in reinforced concrete frames in which the presence of steel affects the moment of inertia of the section. Professor Beggs in this connection, says that by means of a paper model of a structure the stresses are determined and the corresponding sections and reinforcement of the actual structure designed. A second model may then be made, if the refinement is desired, with the widths of its members proportional to the cube root of the moment of inertia of the actual section used. This second model is then tested to determine the new distribution of stresses, and the sections and reinforcement of the first design modified accordingly. It is seldom necessary to revise the first estimate of stresses more than once, for it is only the proportion and not the actual section of the members that determines the distribution of stresses. Considerable changes, too, can be made in the proportion of members with small change in the distribution of stress.

Warning must be given about using models in obtaining stresses, namely, that it does not offer opportunity for incompetent men to enter the designing field. The method is one that will shorten the time now required and lessen the labor of competent men in work which is so heavily mathematical that it breeds the habit of following the line of least resistance and the use of simple and uneconomical forms.

Study for a house at Mill Neck, Long Island, N. Y.

Alfred C. Bossom, Architect

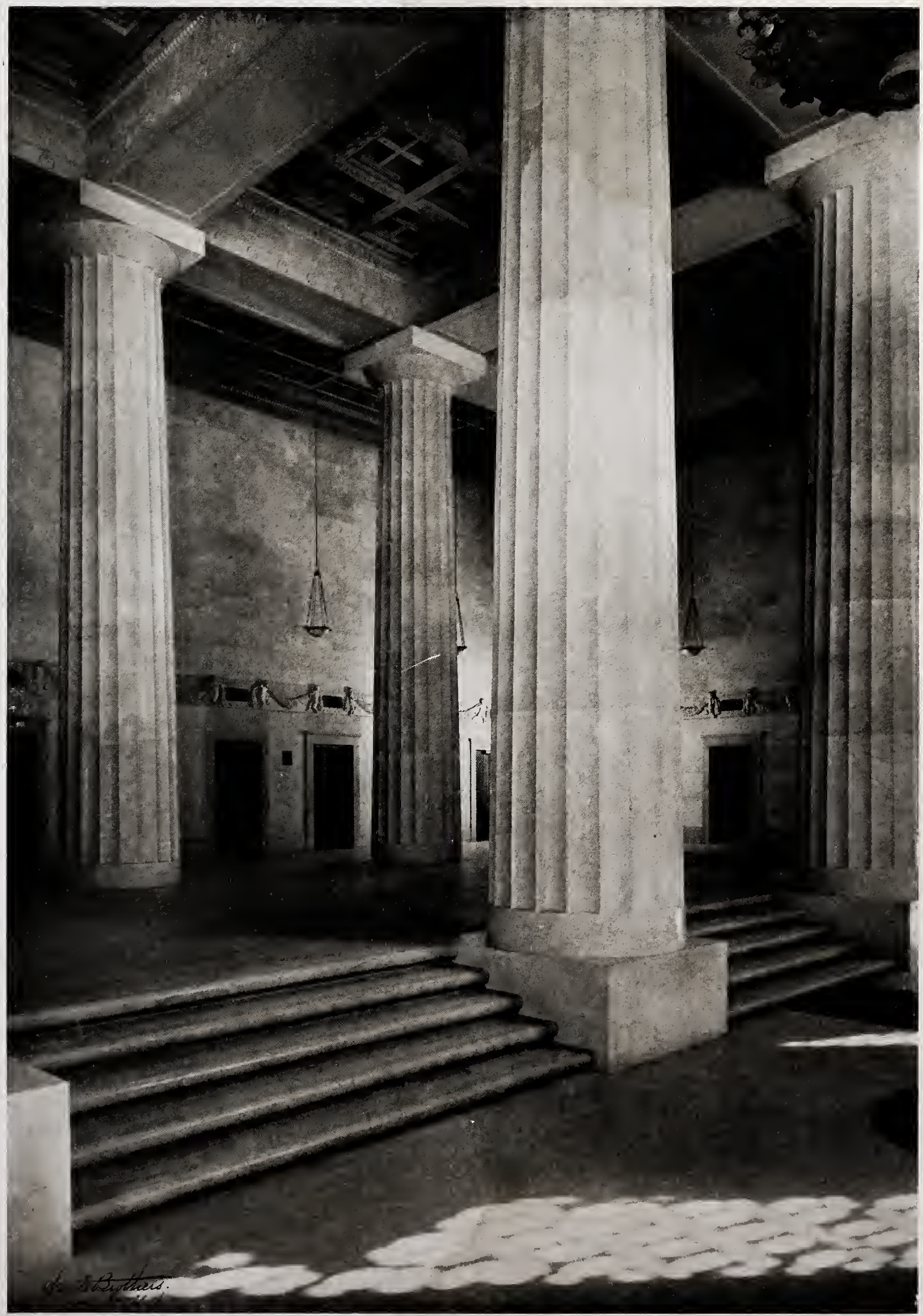
(From the original pencil sketch by L. J. Keimig)



DETAIL OF LOWER STORIES

TELEPHONE AND TELEGRAPH BUILDING, BROADWAY, NEW YORK

WELLES BOSWORTH, ARCHITECT

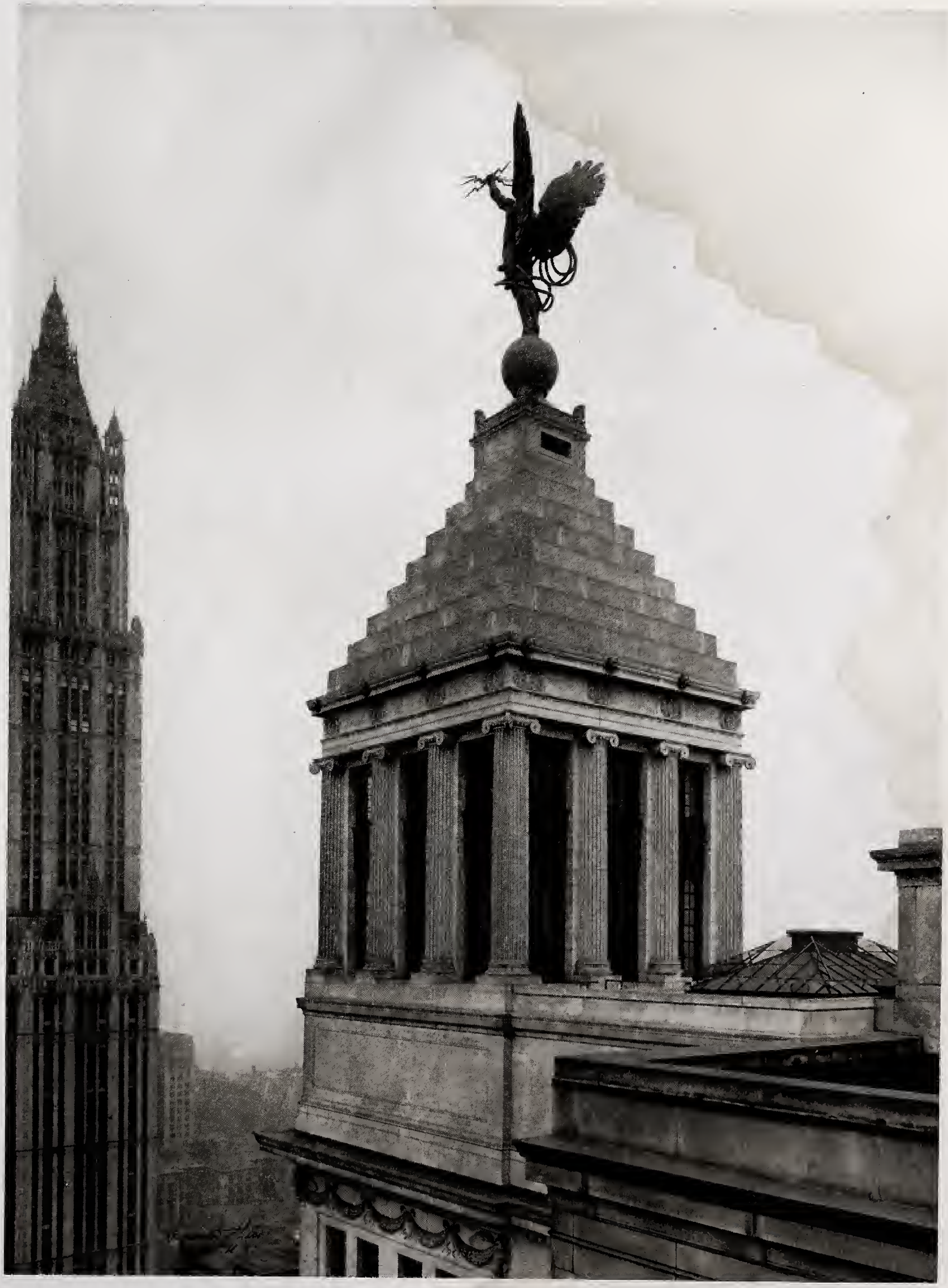


ENTRANCE VESTIBULE AND ELEVATOR HALL

TELEPHONE AND TELEGRAPH BUILDING, BROADWAY, NEW YORK

WELLES BOSWORTH, ARCHITECT

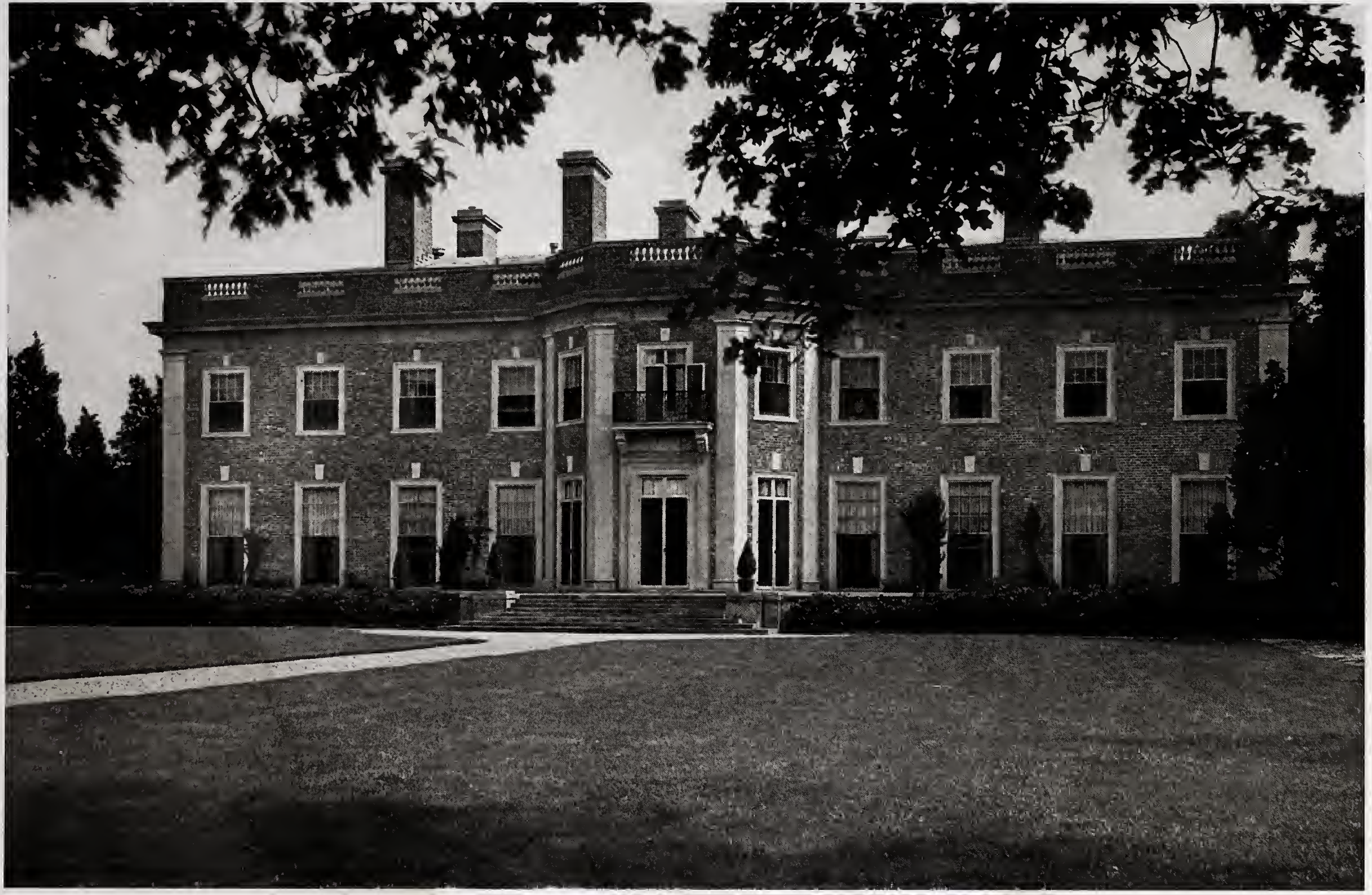
THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW
VOL. CXXII, NO. 2397
JULY 5, 1922



DETAIL OF TOWER SURMOUNTING NORTH WING OF THE TELEPHONE AND TELEGRAPH BUILDING, BROADWAY, NEW YORK

WELLES BOSWORTH, ARCHITECT

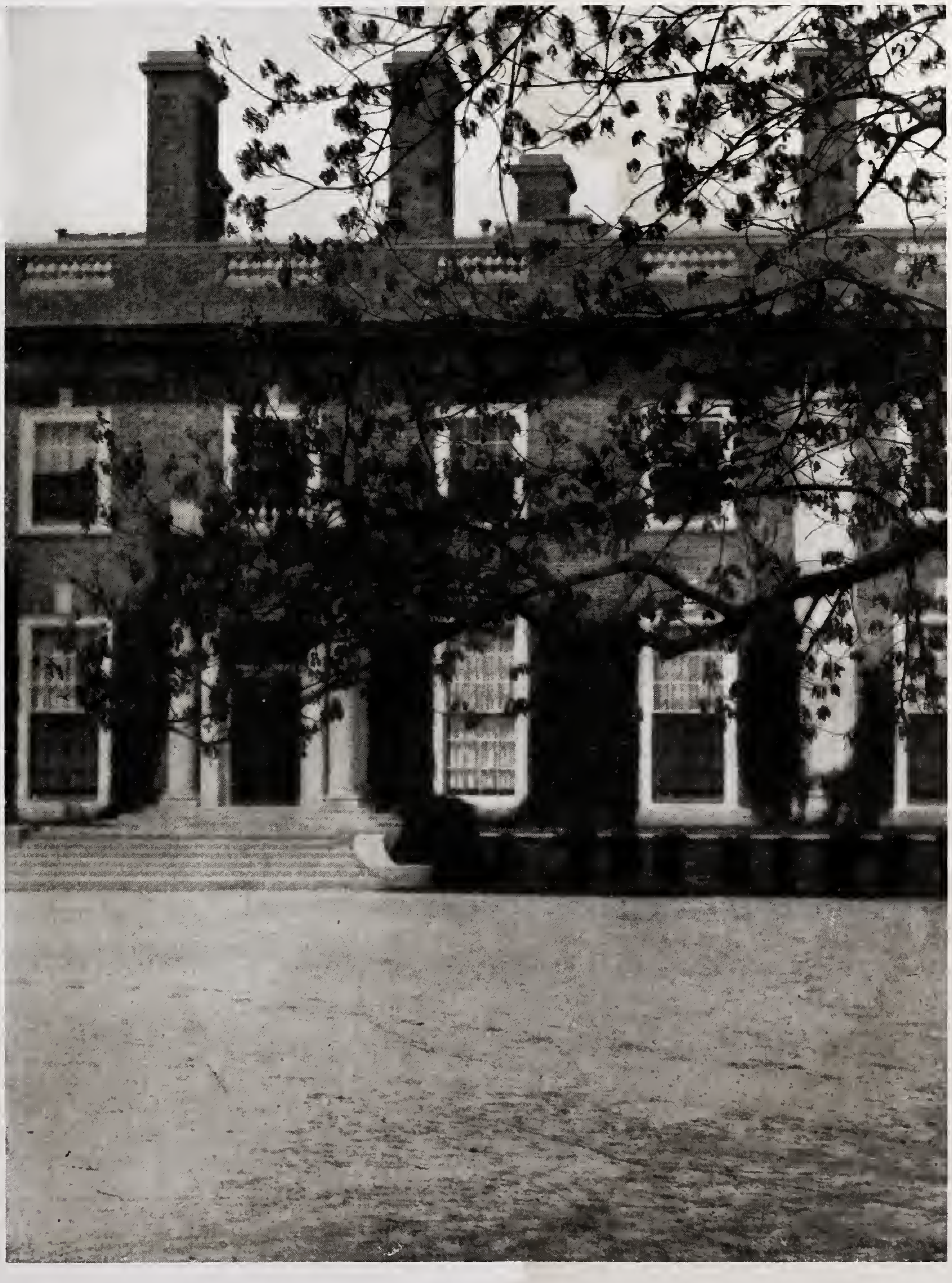
THIS BUILDING IS CONSTRUCTED ENTIRELY OF WHITE GRANITE. ALL WINDOW SASH AND MULLIONS ARE OF BRONZE. THE SURMOUNTING FIGURE OF "ELECTRICITY" IS OF BRONZE AND 19 FEET HIGH



HOUSE OF WALTER FARWELL, ESQ., SYOSSET, LONG ISLAND, N. Y.

WELLES BOSWORTH, ARCHITECT

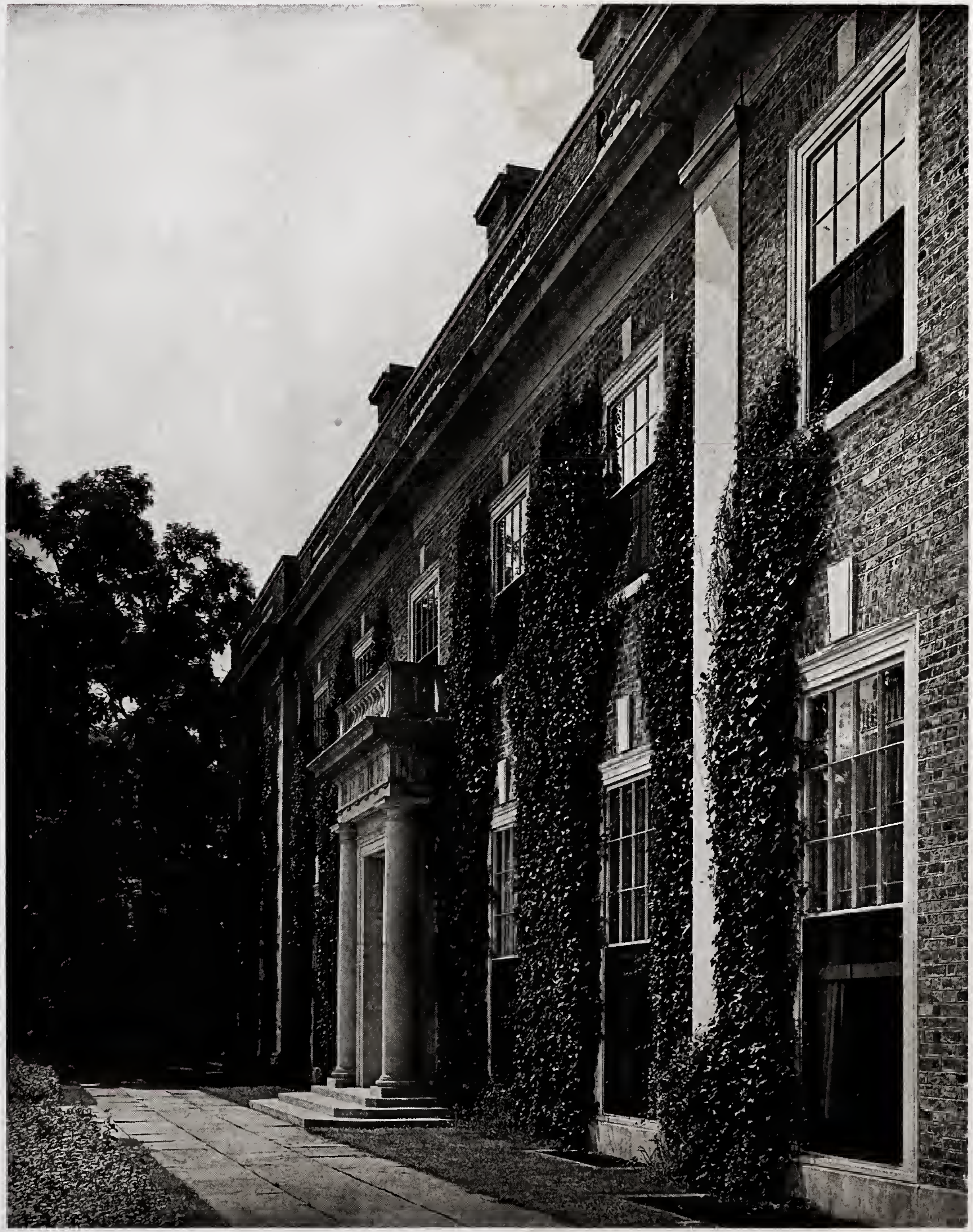
THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW
VOL. CXXII, NO. 2397 JULY 5, 1922



SOUTH FRONT

HOUSE OF WALTER FARWELL, ESQ., SYOSSET, LONG ISLAND, N. Y.

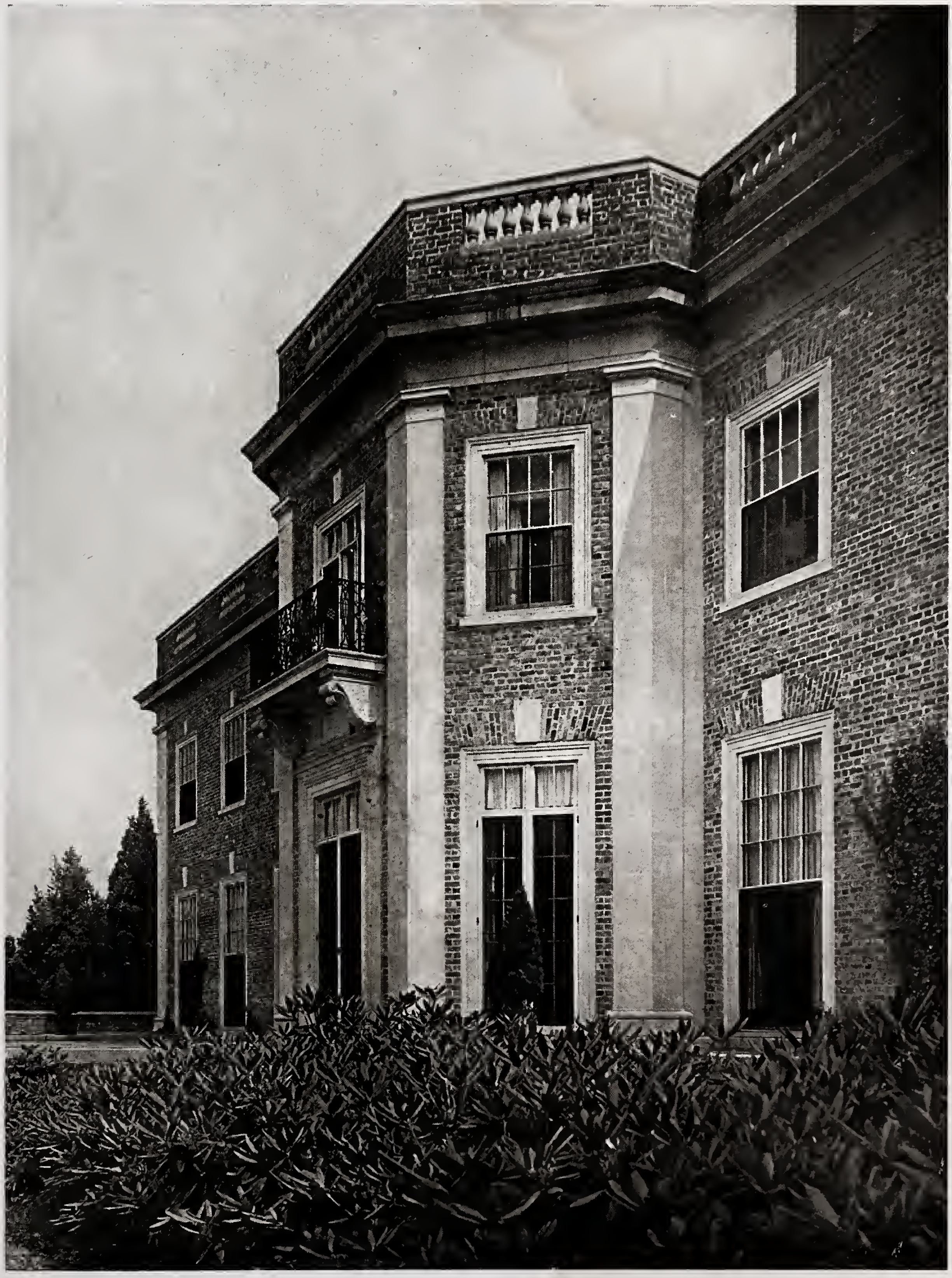
WELLES BOSWORTH, ARCHITECT



SOUTH TERRACE AND ENTRANCE

HOUSE OF WALTER FARWELL, ESQ., SYOSSET, LONG ISLAND, N. Y.

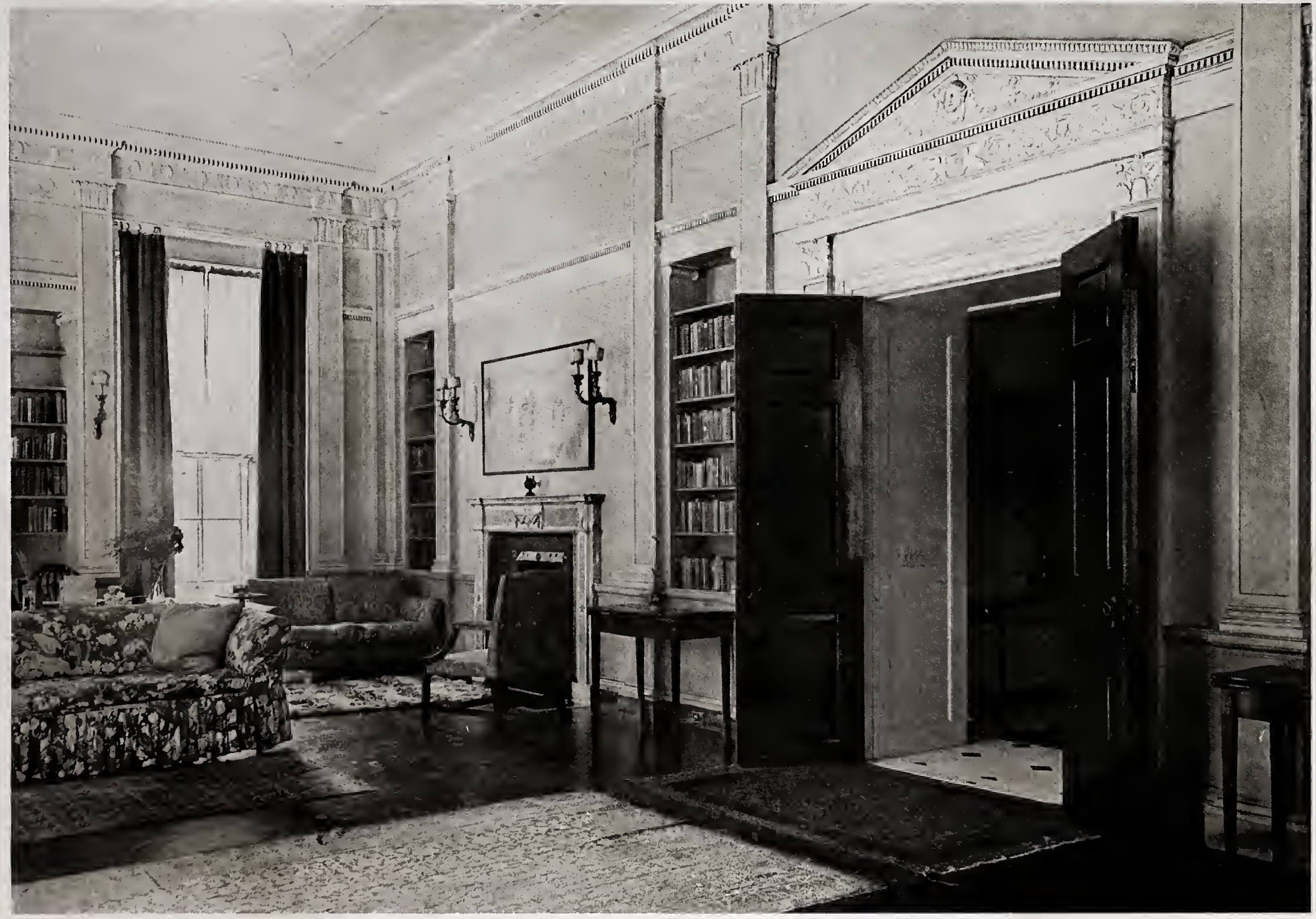
WELLES BOSWORTH, ARCHITECT



DETAIL ON NORTH TERRACE

HOUSE OF WALTER FARWELL, ESQ., SYOSSET, LONG ISLAND, N. Y.

WELLES BOSWORTH, ARCHITECT



VIEW IN LIBRARY

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THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW
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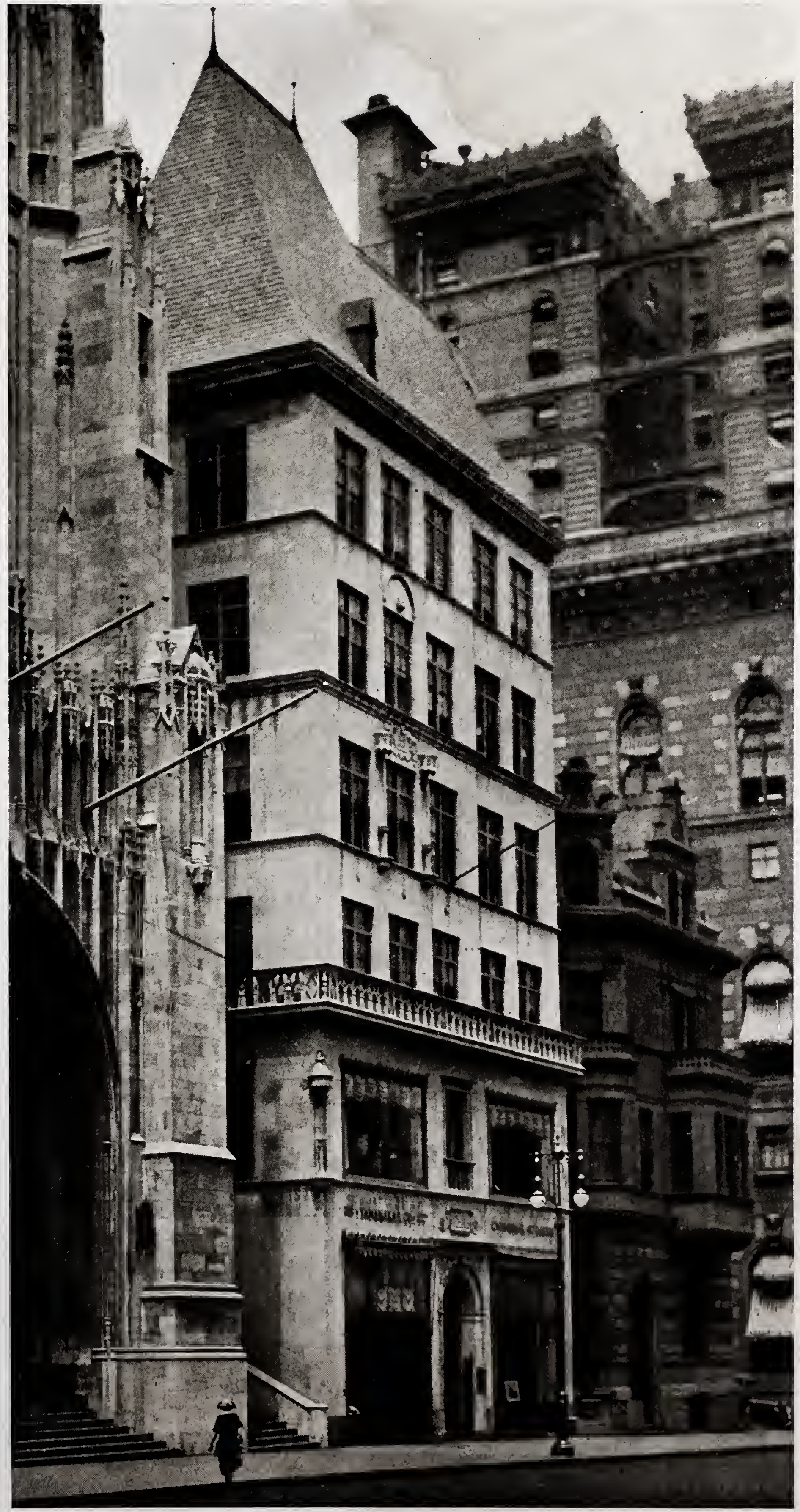
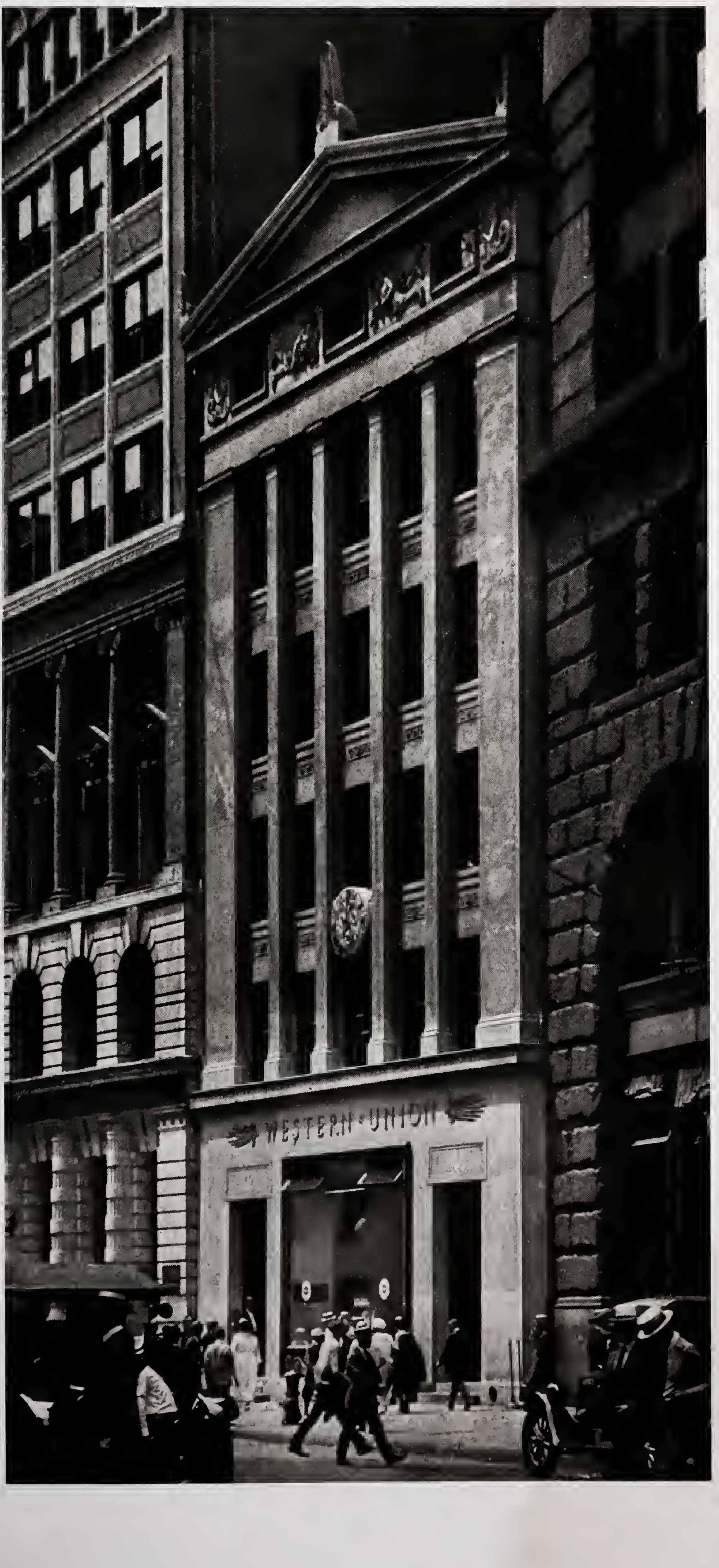


OFFICE BUILDING, 680 FIFTH AVENUE, NEW YORK

WELLES BOSWORTH, ARCHITECT

THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW
VOL. CXXII, NO. 2397
JULY 5, 1922



OCEAN CABLE BUILDING
OF THE
WESTERN UNION TELEGRAPH CO.

BROAD STREET
NEW YORK

WELLES BOSWORTH

ARCHITECT

THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW
VOL. CXXII, NO. 2397
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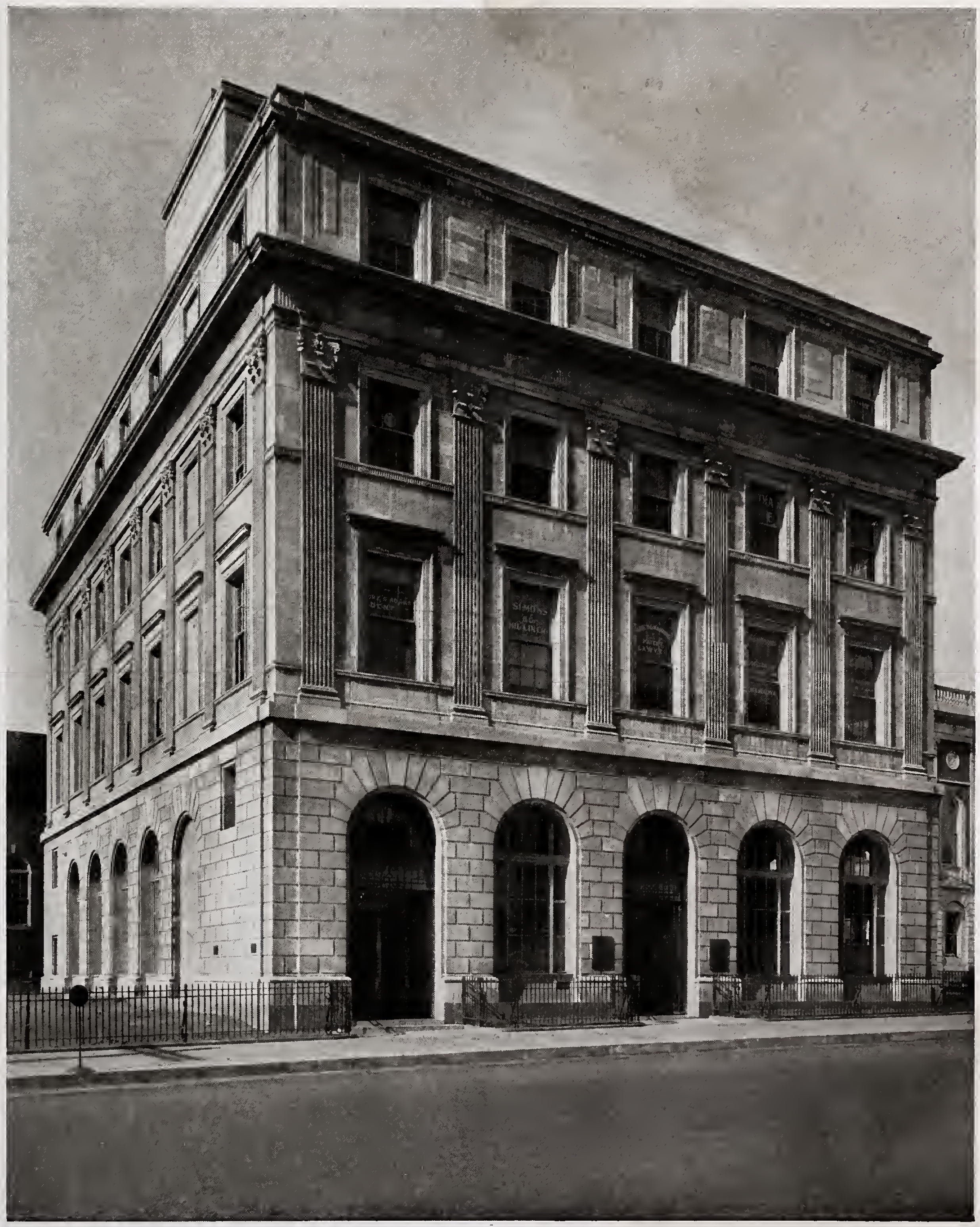
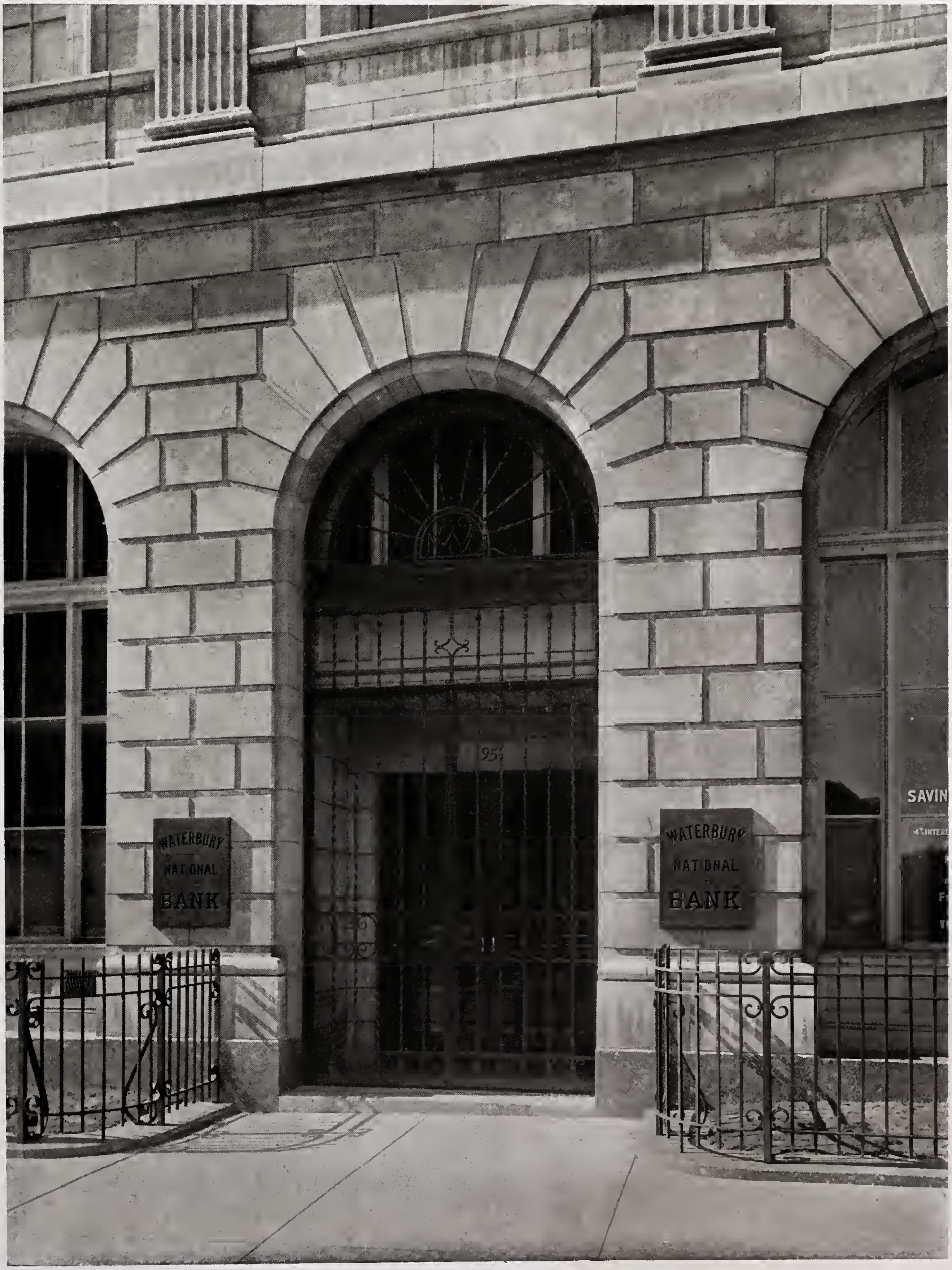


WATERBURY NATIONAL BANK, WATERBURY, CONN.

CASS GILBERT, ARCHITECT



MAIN ENTRANCE

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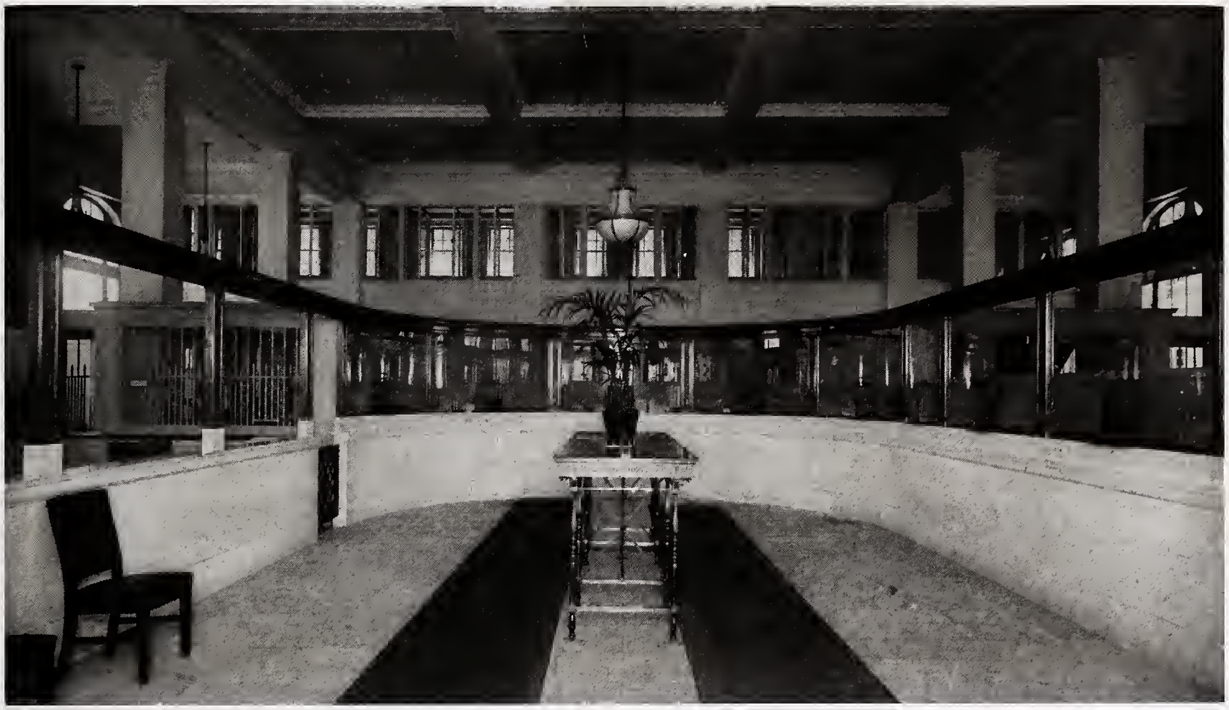
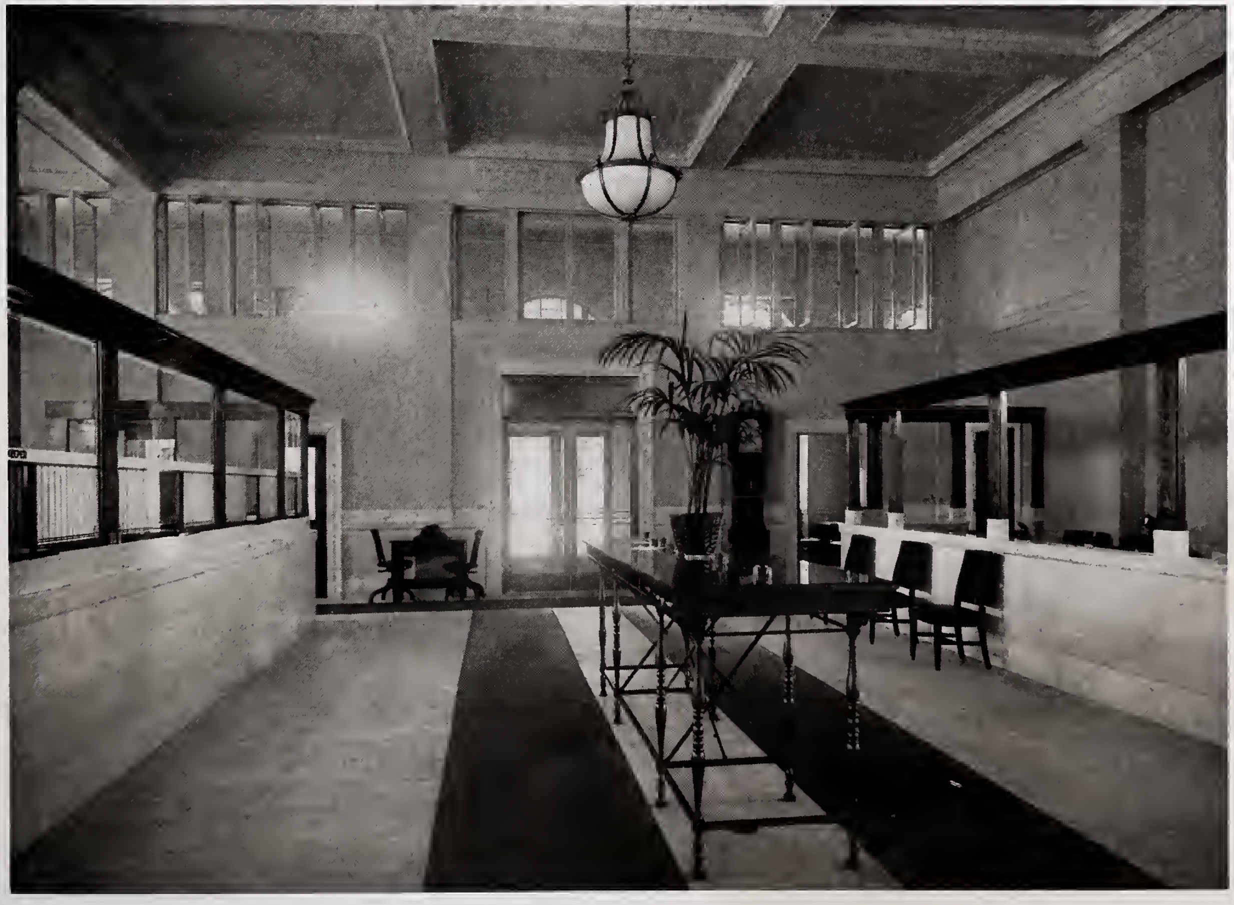
CASS GILBERT, ARCHITECT

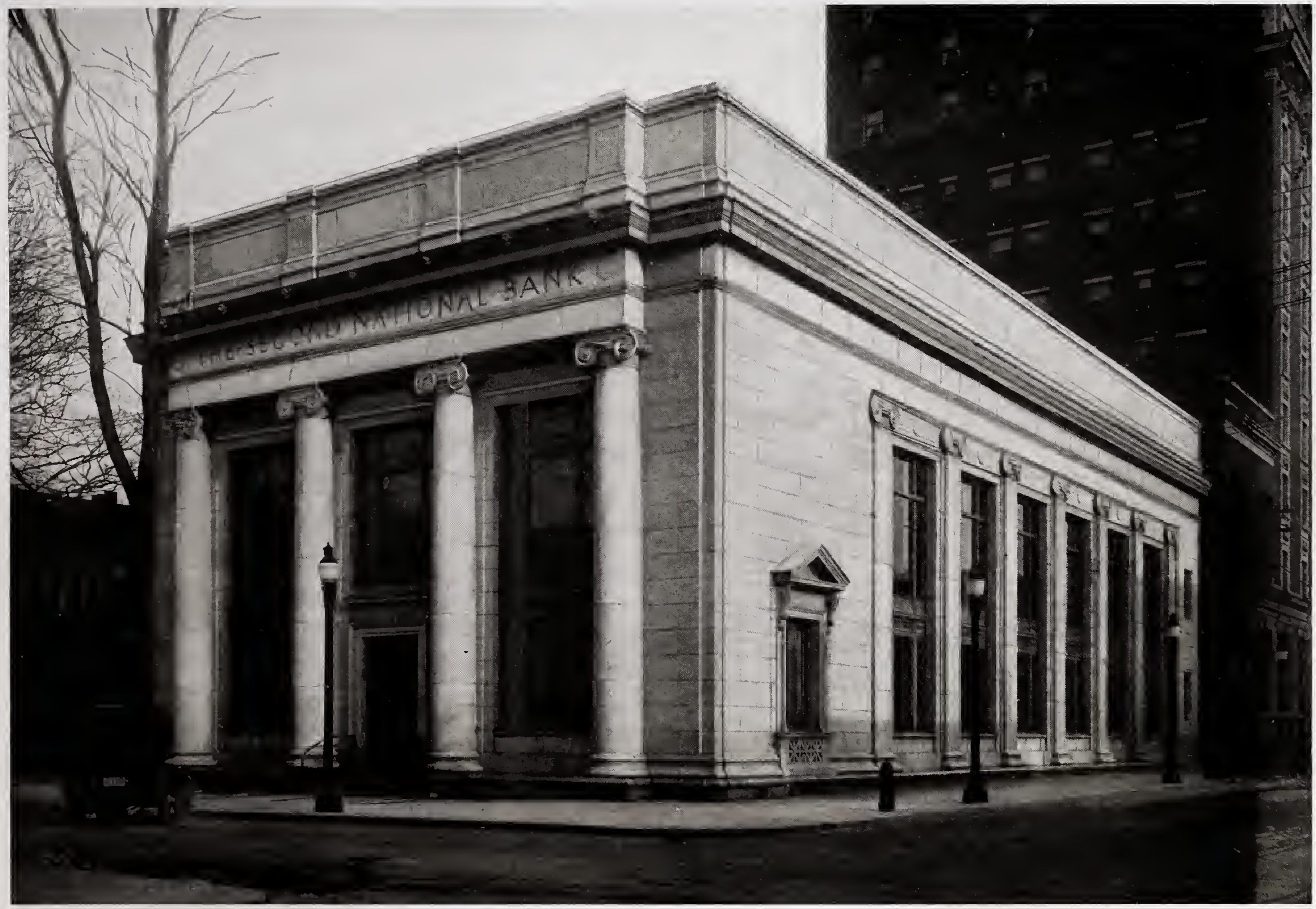




BANKING ROOM

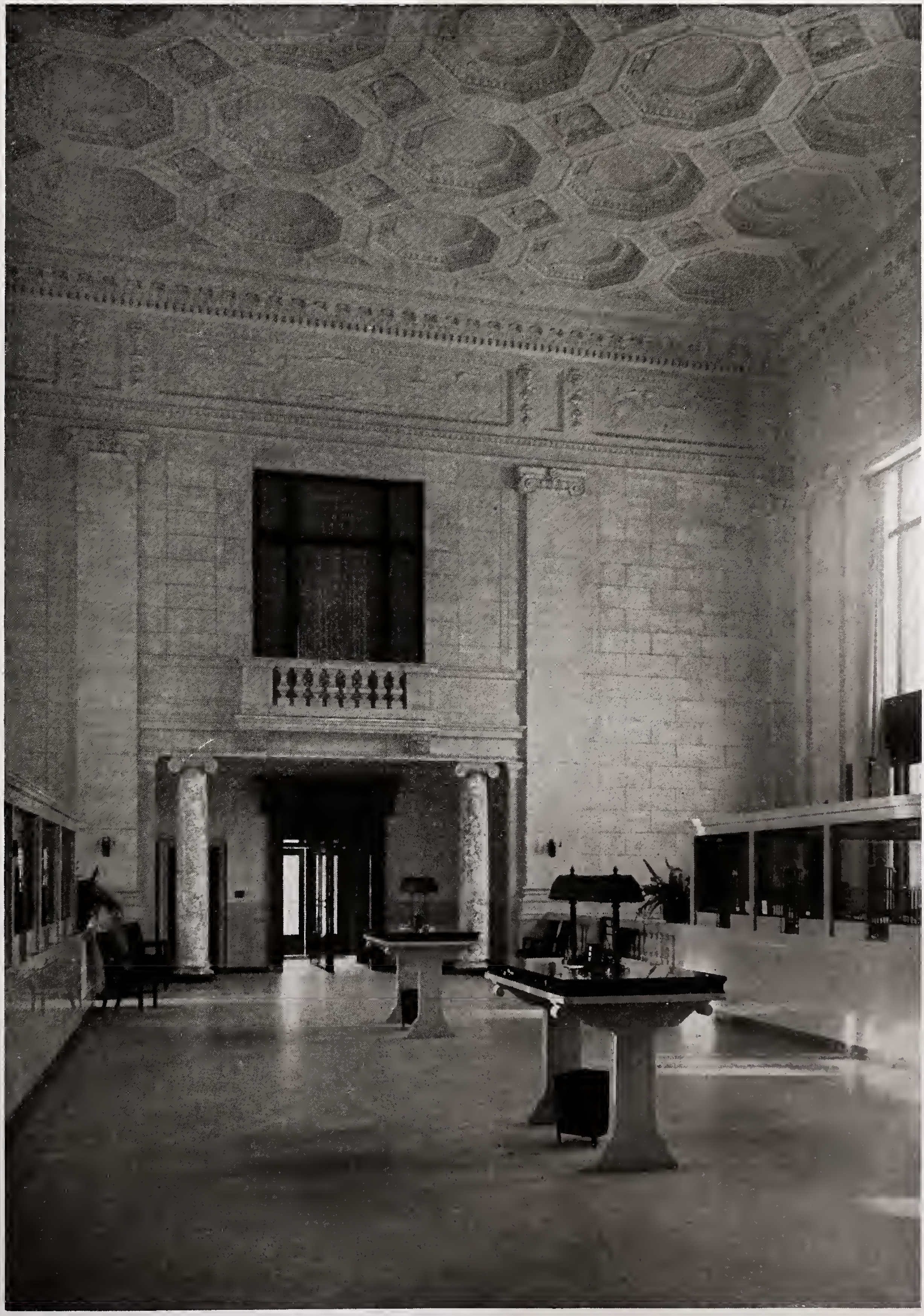
WATERBURY NATIONAL BANK, WATERBURY, CONN.

CASS GILBERT, ARCHITECT



SECOND NATIONAL BANK, ERIE, PA.

W. L. STODDART, ARCHITECT



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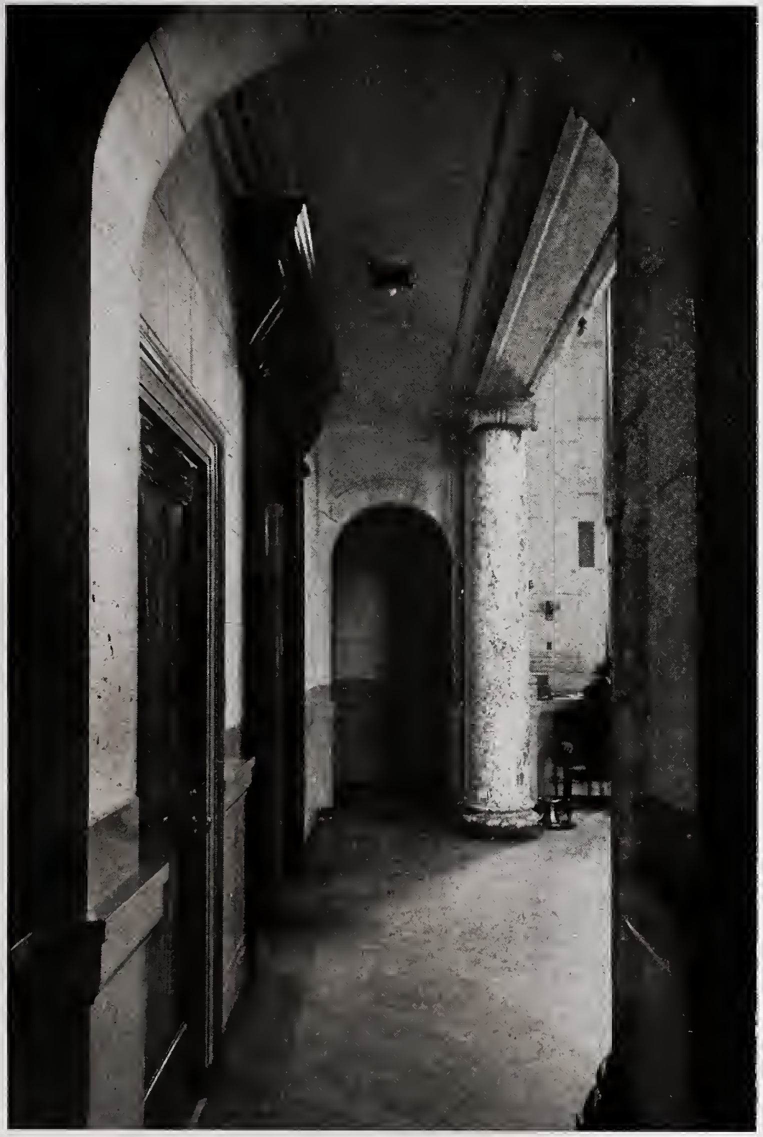

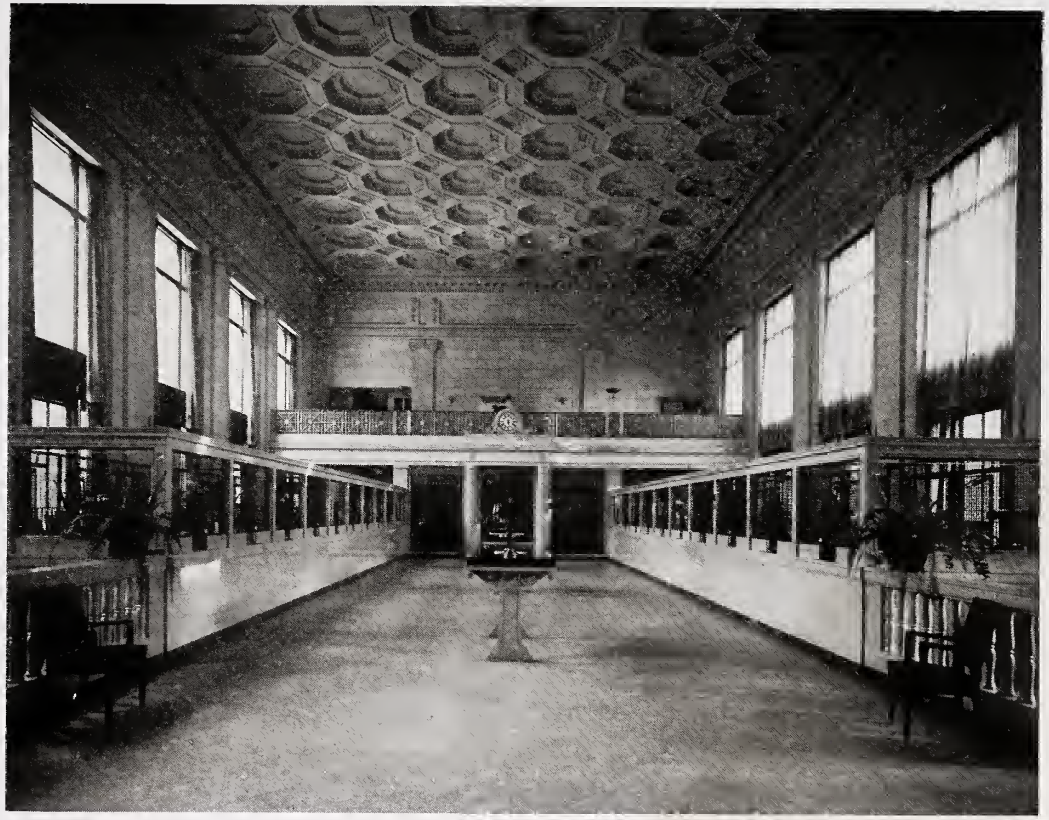

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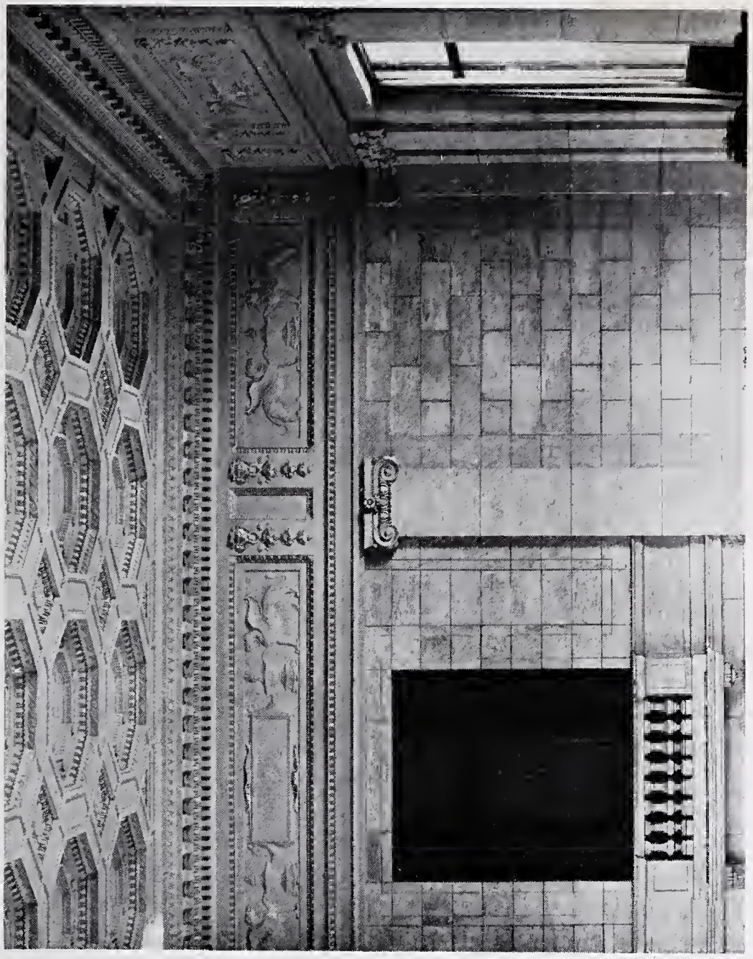

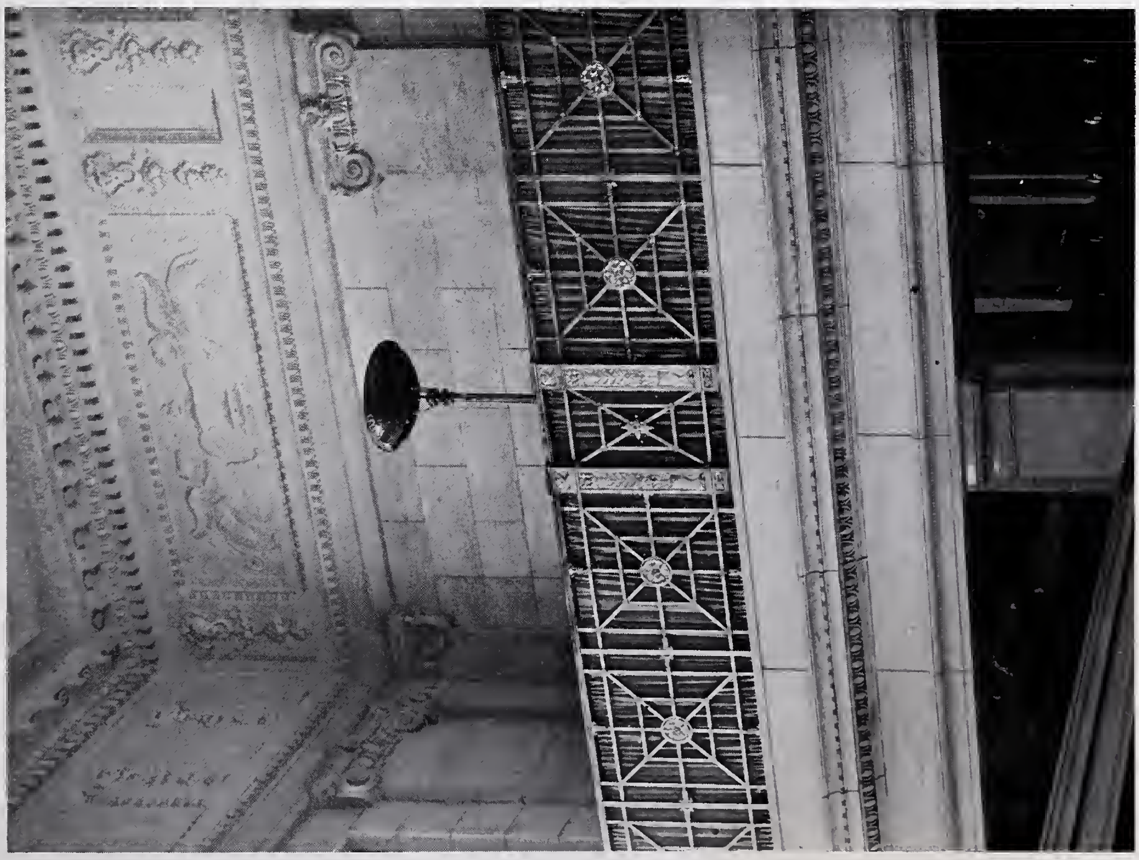

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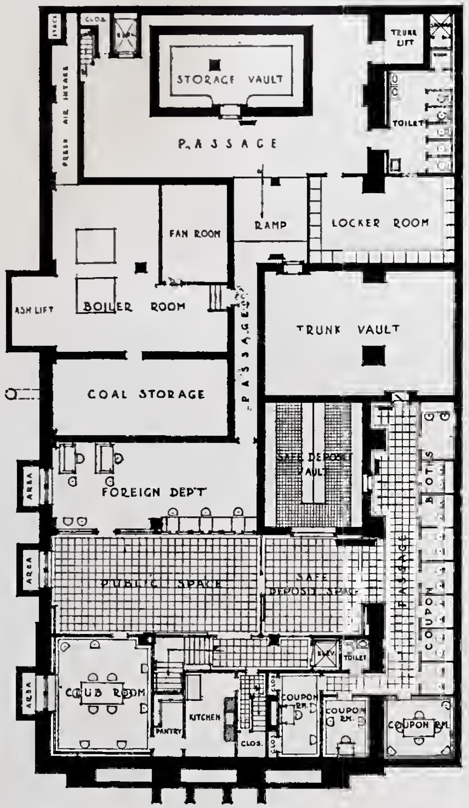
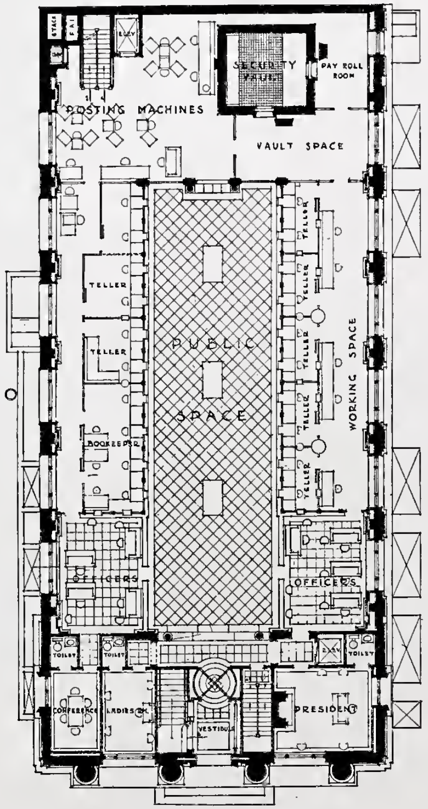
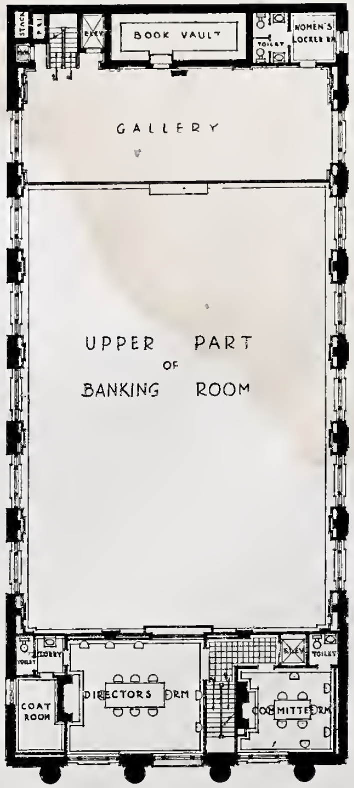


BASEMENT FLOOR PLAN



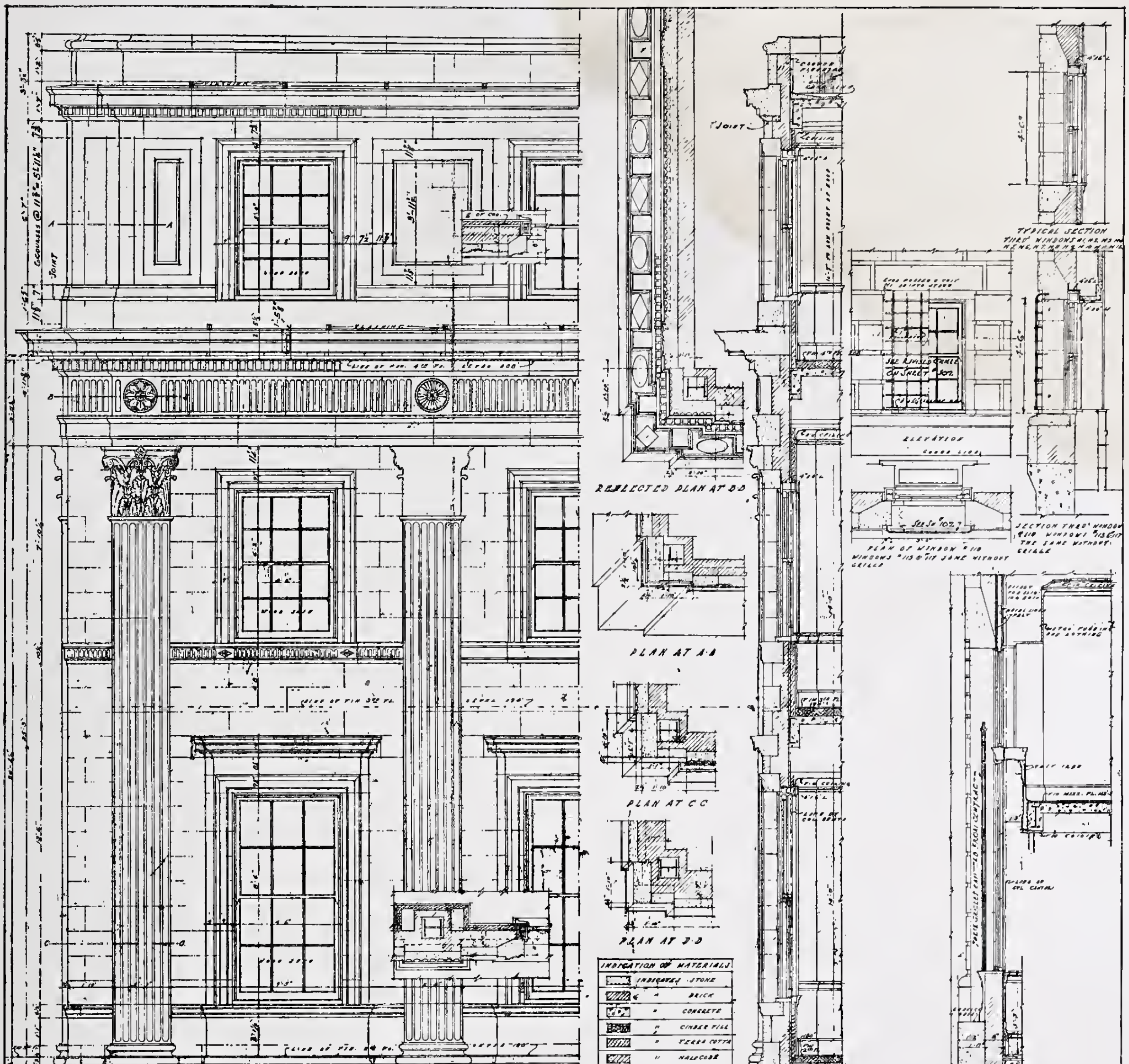
FIRST FLOOR PLAN



MEZZANINE FLOOR PLAN

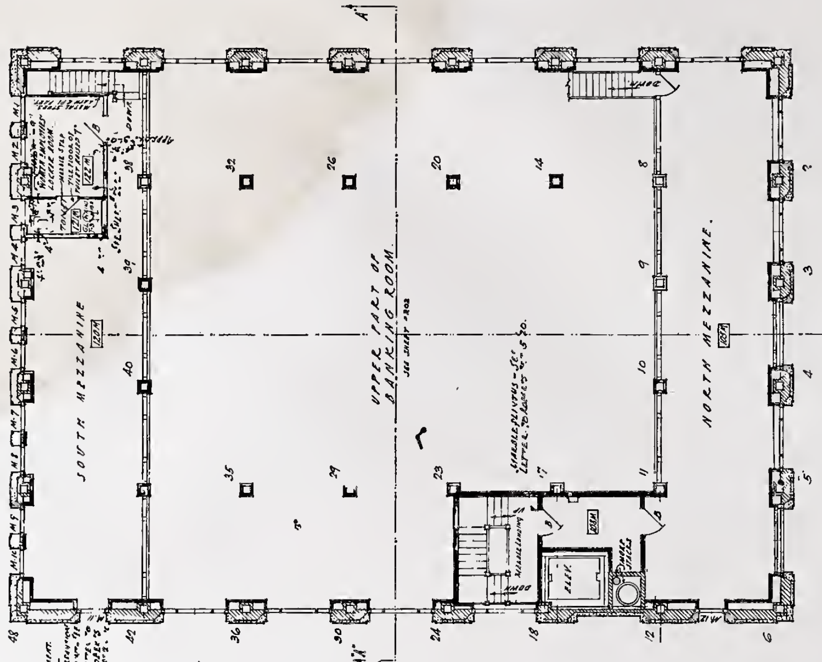
SECOND NATIONAL BANK, ERIE, PA.

W. L. STODDART, ARCHITECT

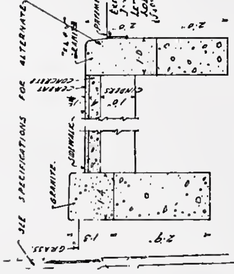

REFLECTED PLAN AT B-B
PLAN AT A-A
PLAN AT C-C
PLAN AT D-D
INDICATION OF MATERIALS
INDICATES STONE
BRICK
CONCRETE
CINDER FILL
TERRA COTTA
ELEVATION
TYPICAL SECTION THRU' WINDOWS
SECTION THRU' WINDOWS No. 104 105. 106 TYPICAL FOR WINDOWS
½ ELEVATION OF GATES AT BANK ENTRANCE # 103
½ ELEVATION OF TYPICAL WINDOW OPENING
½ ELEVATION OF WINDOW OPENING SHOWING GRILLE SEE SPECIFICATIONS
SECTION THRU' BANK ENTRANCE # 103 AND OFFICE ENTRANCE # 101
½ REFLECTED PLAN OF BANK ENTRANCE
½ PLAN OF BANK ENTRANCE
PART ELEVATION OF DOORWAY TO BANK ENTRANCE AND OFFICE ENTRANCE
JOINT

WATERBURY NATIONAL BANK, WATERBURY, CONN.

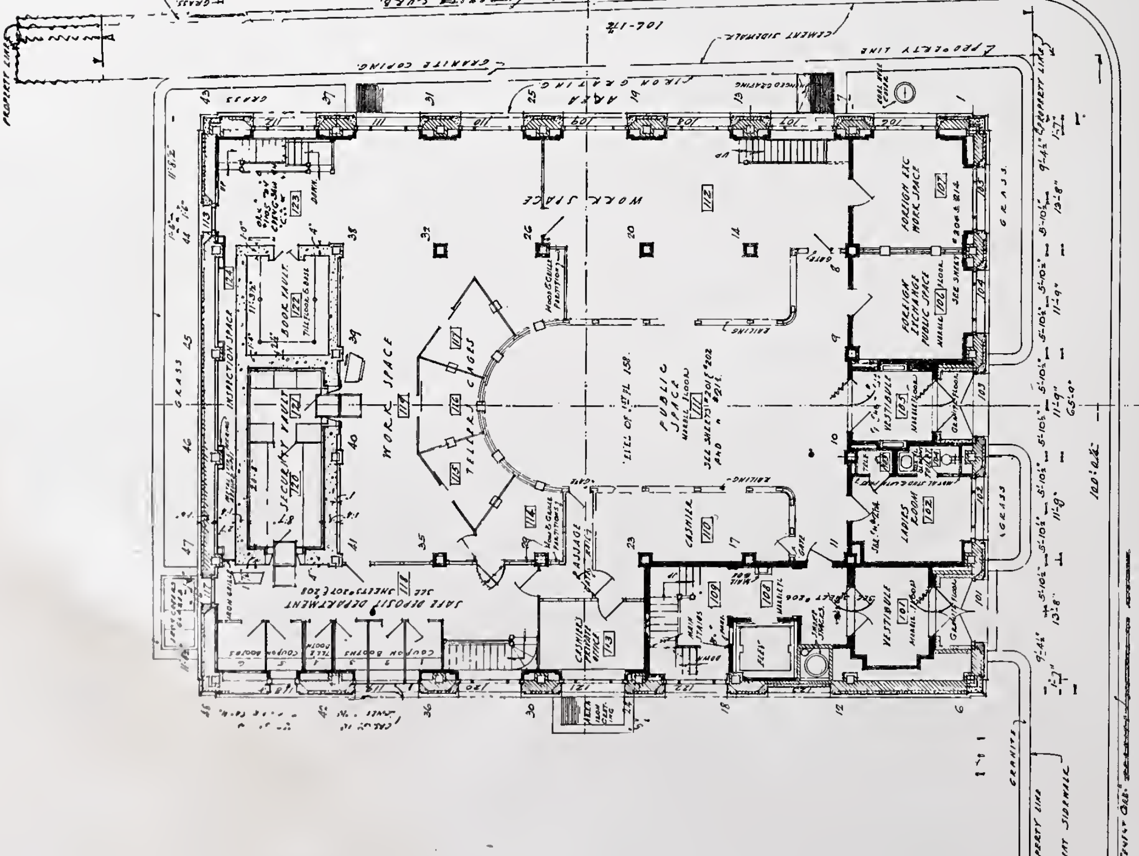
CASS GILBERT, ARCHITECT



MEZZANINE FLOOR PLAN



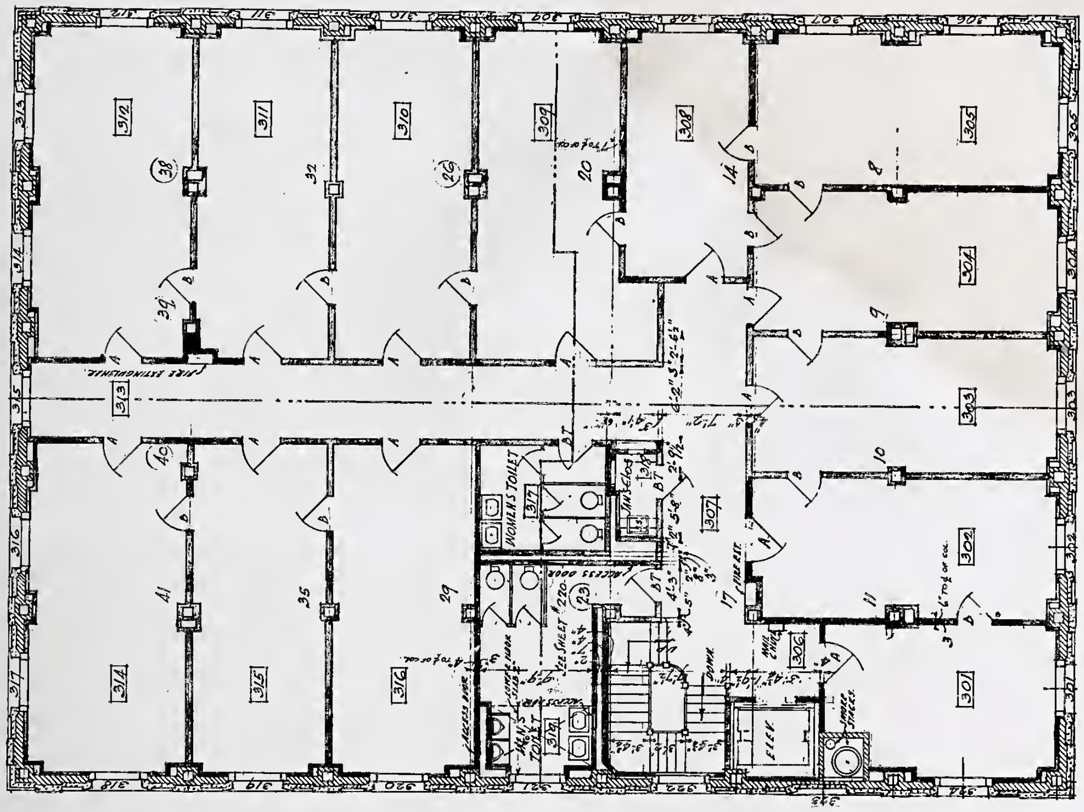
SECTION OF SIDEWALK AND CURBS SCALE ¾"=1'0"



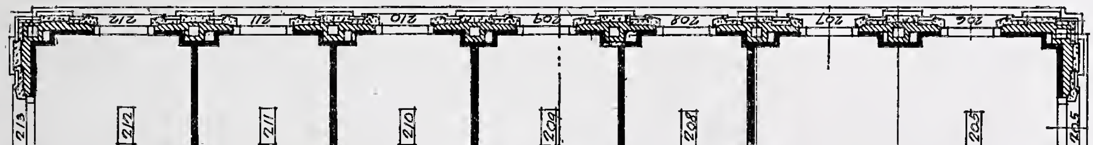
FIRST FLOOR PLAN

WATERBURY NATIONAL BANK, WATERBURY, CONN.

CASS GILBERT, ARCHITECT



THIRD FLOOR PLAN



SECOND FLOOR PLAN

WATERBURY NATIONAL BANK, WATERBURY, CONN.

CASS GILBERT, ARCHITECT

Relation of Classic Example

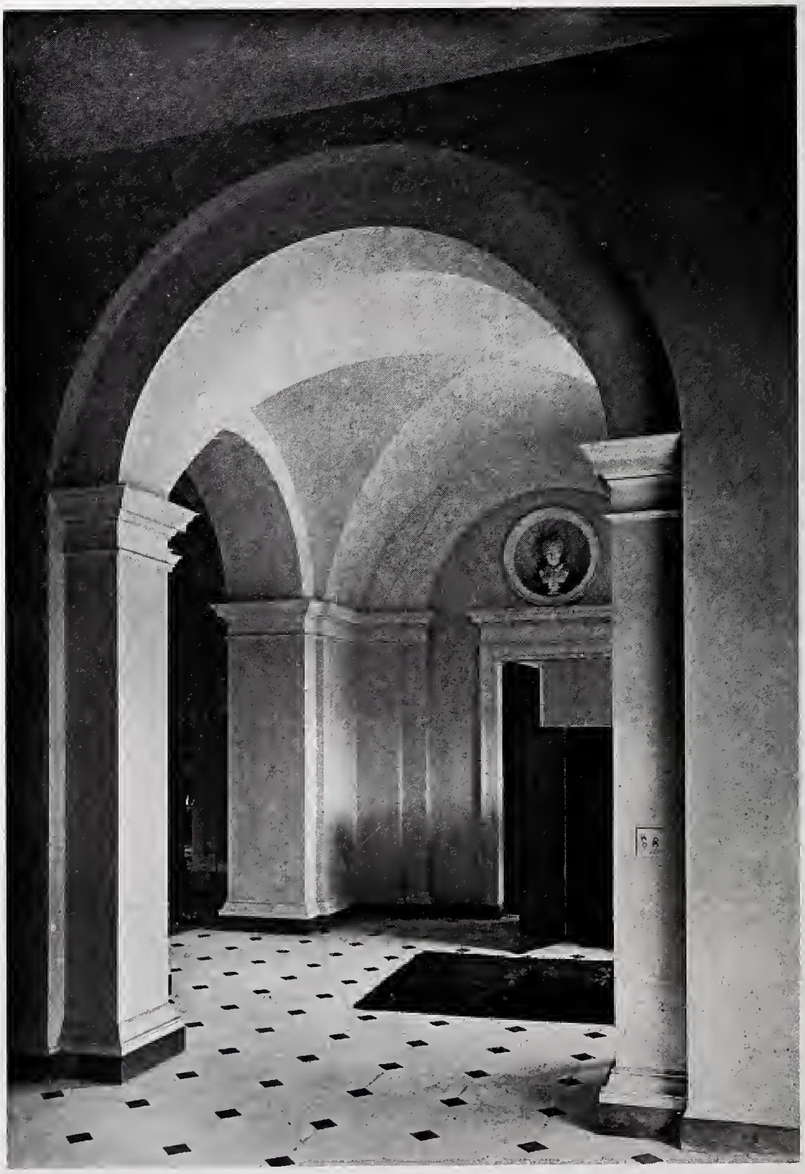
(*Continued from page 12*)

The slim pilaster motive of the façade gives broad windows and occupies but little space in the total width. It also groups the upper stories into one and simplifies the composition with great advantage. The scheme seems to be original and to mark a new development in the adaptation of classic architecture to modern needs. A clock dial of marble gives "Western Union Time" to the street with smaller clock faces about the center marking the hour at London, Paris and San Francisco.

Under the pediment, surmounted by a spirited acrothemion with "elan," a frieze of windows and sculptured figures of wind and lightning, gives a note of decoration to the façade. The first story wall is inclined towards the top and forms a strong basement to the pilaster stories above. There are several Goodyear "refinements" or rythmic spacing of openings, curves, etc., and the whole effect is an expression of the best architectural tradition.

ADJOINING the St. Thomas' Church with its staggered offsets and broken surfaces, its great entrance arch and elaborate detail on the South, and carrying over to the University Club on the North the store and office building at 680 Fifth Avenue, New York, presented a difficult problem even if it had not been further limited by the fact that it was required to be a so-called "commercial proposition;" all expenditures not required for business considerations were to be avoided. Though the owner had restricted the height so that it should not cut off the sunlight from his house on 54th Street, he left the matter otherwise to the judgment of his real estate agent and his architect.

The treatment adopted, it will be observed from the illustration, possesses only two features in excess of the average business building, and these are relatively inexpensive, the plain slate roof and the third story balcony, which takes up, by the way, the break in the front wall corresponding to the roofs. These two features, however, suffice to do a fine thing for the passerby. They make not only a charming façade to look upon but they make a whole block front into a harmonious ensemble, instead of an eyesore. It has been remarked that the one-sided composition of St. Thomas' façade at first objected to by some critics, has quite disappeared since the 680 Fifth Avenue Building was built. Its tall roof and broken mass below support and help rather than detract from St. Thomas'. We learn that the architect was urged by some interested persons to use the Gothic style. He objected and fell back on Dr. Stires of St. Thomas' and Mr. Goodhue, both of whom argued that it would look as if St. Thomas' had gone into business. Mr. Bosworth, therefore, adopted the style of the French Renaissance as being midway between the Gothic of St. Thomas and the heavy formality of the University Club. Nothing could have been happier and quite aside from the matter



Entrance Vestibule

House of Walter Farwell, Esq., Syosset, Long Island, N. Y.

Welles Bosworth, Architect

of its neighbors; it is a beautiful yet highly practical commercial structure. The two stories of shop windows, heavily framed with the balcony above, give to them an importance of great value for display and advertising purposes. The entrance with its round arch decorated jambs announces the fine office floors above. The windows of these offices are especially tasteful and pleasing. In their flat, iron frames, the plates of glass cut to decorative sizes, reflect the light in pretty patches, thus breaking up the usual dark holes in the façades where single sheets of glass are used. Two details on this building are especially amusing and enjoyable, the bronze crestings over the shop windows of the second story and the little column pedestal in the empty niche at the corner. There are many empty niches on St. Thomas'. Perhaps when they are filled something may be placed here, but, if so, it will not be as pleasing, in all probability, as it is at present for then, as Rudolph Evans the Sculptor puts it, "the mystery will be explained away."

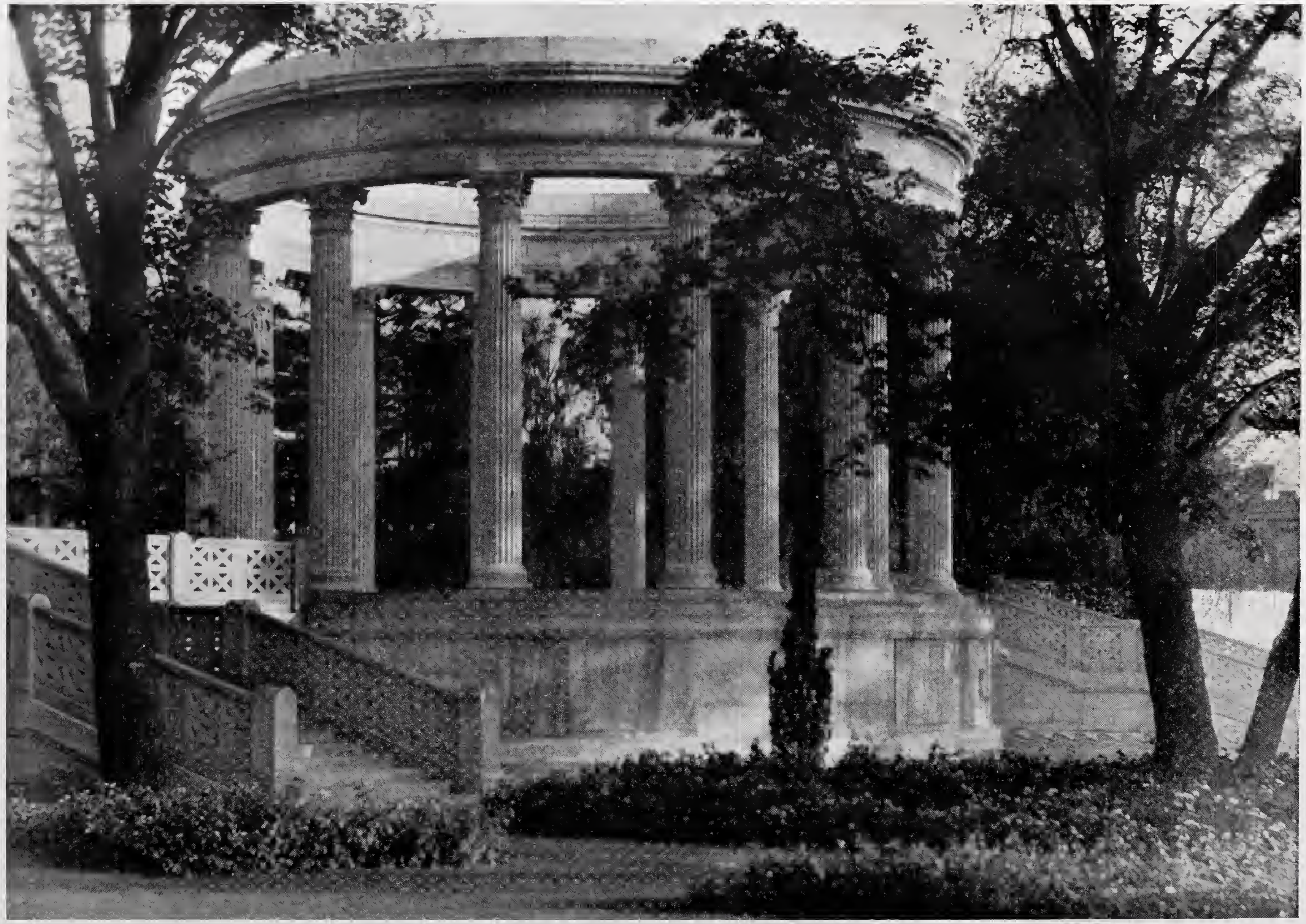
ART AND ORGANIZATION

BY RICHARD SCHERMERHORN, JR., Fellow, American Society of Landscape Architects

MR. ERNEST FLAGG'S article in a recent number of The American Architect contains a line of thought familiar to other professions as well as that of architecture. I think I have heard landscape architects talk in similar vein, and at the end of the discussion, there is always one question which has not been satisfactorily answered, and that is, "Which in the long run will predominate, art or organization?" Can the artist develop his greatest opportunities and realize his utmost success by subordinating everything to art alone, or do the requirements of the period demand special efforts along other lines as well? The main argument, that with the education of the people will come the maximum appreciation of the artist, is theoretically sound, but who will say that the time will ever arrive when the public will have reached a real advanced stage of appreciation? The war has taught us many things we had not even begun to think of a decade ago. We had reached a point where it seemed the public had begun to understand; at least there were signs of definite progress in art appreciation. With the war, however, came a blasting of many traditions, and a new group of principal citizens to contend with. It seems nowadays as if it were almost necessary to begin all over again when it comes to the point of working for greater recognition of merit in art, and who can say but what this condition may not occur again, and frequently, during an artist's lifetime?

There is a very good reason why commercial firms are entering the field of the architect and landscape architect in large numbers and are successfully securing the patronage of the public. The public cannot always understand the various points of distinction between good and inferior design, but when it comes to contracts, economics, the provision for practical utilities and the value of organization, these are subjects which have a familiar ring to them, and who can blame the average citizen for being more or less impressed by the firm who talks fluently about these first and art, perhaps, afterward? The language of one is easily understood; the other, more or less complicated.

Yet after resolving the whole question into its elements, there is really only one very important reason why a commercial concern secures work that an architect should get. That reason is because it knows very well how to advertise its wares and the architect does not. There is of course nothing discreditable to the architect in this condition, but at the same time it is a situation worth seriously considering. Before a competent tribunal, there is no question that an architect with properly organized office could illustrate his superiority in every relative particular over the building concern, not only in the design of structures but in execution of work and economics. But architects have apparently not yet discovered the way of approaching the general public and talking to them in a language they can understand. And in too many cases they seem to underrate the value of organization for carrying out work as it should be carried out. When they overcome these drawbacks, architects will be architects, and builders, builders, and the building art will advance. It may be that architects will be forced now and then to step from a pedestal to accomplish a certain end, but if they secure greater opportunities in so doing, and through these opportunities are able to create more and greater monuments to their art, who will say that the path to the ultimate goal has not been shortened? Ethics after all have principally to do with the advance of a just cause toward a definite object, and professional ethics if fully analyzed will be found to be based principally upon common sense. Whatever relates to good sense in the professional ethics of architecture and has natur-



CIRCULAR WHITE MARBLE COLONNADE IN THE GARDENS OF SAMUEL UNTERMYER, ESQ., GREYSTONE, N. Y.

WELLES BOSWORTH, ARCHITECT

(See text for description)

ally to do with honorable conduct, will have much to do with the advancement of the profession.

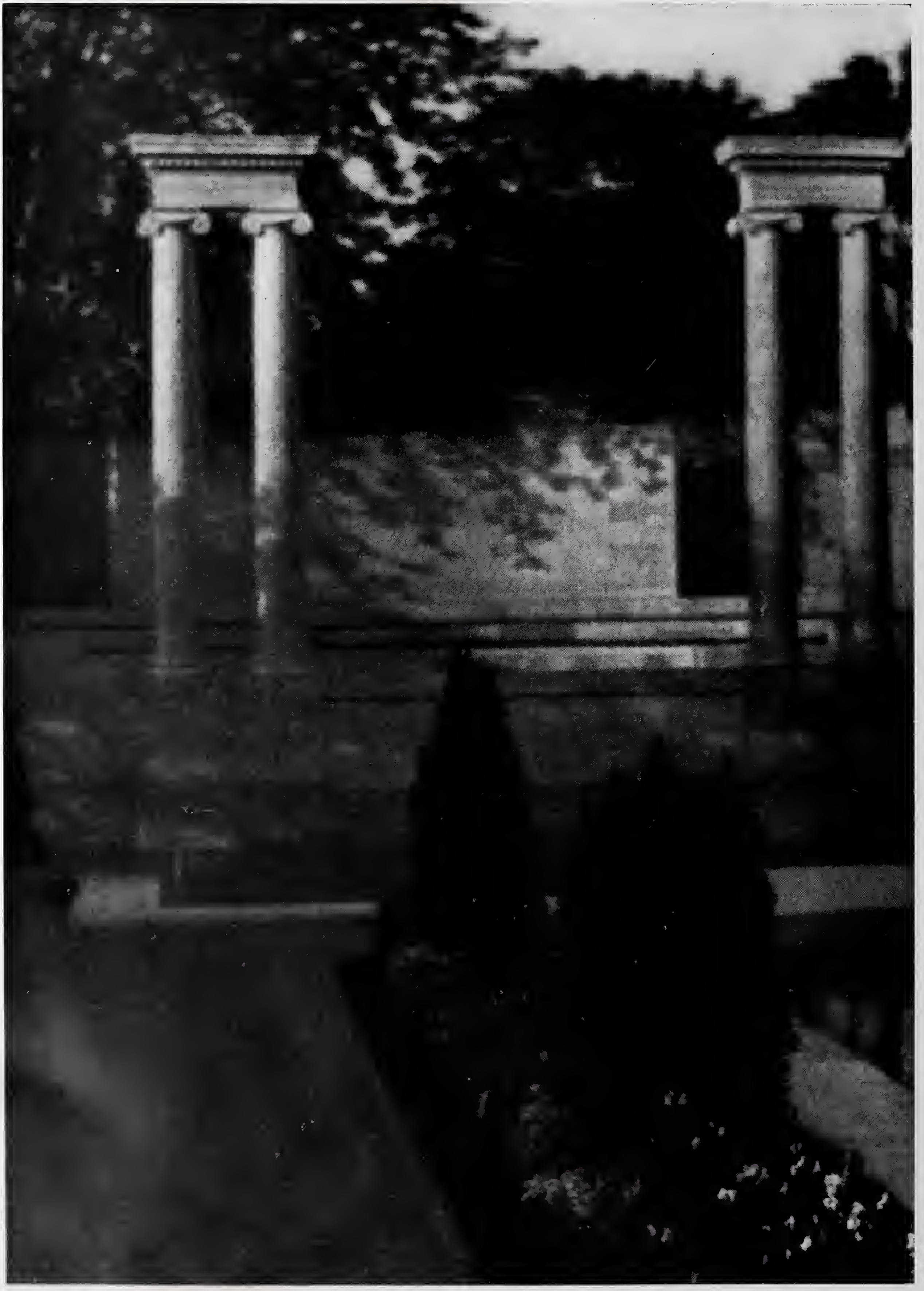
The writer of this article is a landscape architect, not an architect, and the reader may thus believe him guilty of taking unwarranted liberty in thus airing his views about another profession. But the problems of the landscape architect, and principally the ethical problems, are to a great degree similar to those of the architect, though I am quite sure the seat of the former is much more uneasy than that of the latter. It is difficult to read Mr. Flagg's article without wondering if his views on the exalted side of art are shared by most of the architects. If this should be so, one of the first things architects should do, if they are to be consistent, is to give proper recognition and aid to landscape architects. For landscape architecture is a fine art and a distinct specialty and architects are in a more advantageous position to extend aid than any other group of men.

The landscape architect has undergone a very serious course of specialized training and devotes himself solely to his particular profession. While his art instincts and facility in design have naturally been fully cultivated, he is also supposed to be thoroughly familiar with details of horticulture, land engineering and elements of architecture, to say nothing of the practical methods of organization and execution of work and the economics pertaining to it. Yet there are not only commercial firms who undertake the whole work, including design and all technical features, but architects themselves practice in landscape architecture, and this condition is increasing daily in extent. The argument is, of course, that landscape architecture should be classed as one of the details of architectural work, that the architect has also had training in landscape design and it is necessary for art's sake for him to maintain control of the work. There are courses in landscape design in architectural schools, and though they contain only a slight smattering of the whole subject, nevertheless architects deem this knowledge sufficient to enable them to practice almost any kind of landscape work. It is, therefore, quite usual for the architect to make plans for the layout of a country property without seeking the assistance of a landscape architect. The working out of planting and construction details can then be entrusted to some firm of landscape contractors, who execute the contract part of the work also.

There is no need of going into the arguments which would show this to be an inefficient method of conducting landscape work. Before a competent and unbiased tribunal it would be easy to bring out the positive superiority of the professional landscape architect for authority in landscape work. The manner in which many architects provide for landscape work in this day is one illustration of poor organization.

There is another method of carrying out landscape work which is also used by some architects. Viewing the landscape architect in the same light as structural and sanitary engineers, interior decorators, etc., he is sometimes willing to employ the former on this basis, for just such assistance as he may believe he needs. This means that the landscape architect accepts his fee direct from the architect and they sign their names jointly on the landscape plans. There are many defects to this arrangement also, but it is far preferable for both professions to the first method.

If the architects therefore are puzzled nowadays over encroachments upon their profession, how much more perplexed are the landscape architects who are getting beset from all directions. Yet the trouble of the landscape architect could be relieved amazingly if a better understanding could be arrived at between the two professions. There is a reason why the architect may desire to retain some control over landscape work. The landscape treatment of the surroundings of his house may make or mar his house, and he cannot always be a personal friend of the landscape architect or be fully familiar with the competence of his work. But even if this were not granted, I am still inclined to advise that landscape architects offer, when necessary, to identify themselves with architects in the same way as the engineers and others. True, landscape architecture is a fine art, and should not be classed wholly with the sciences, and this arrangement would not be in accordance with the lines he has chosen in following out his ideals. But there are the necessities of the times to contend with, and, as I believe, architects will have to make some sentimental sacrifices in order to reach the higher things, so also must landscape architects, though, perhaps, in other ways. It is worth trying, anyhow, and it will help improve a field for the landscape architect from which he is now frequently barred. It would also mean that the architect would use his influence in directing the attention of his clients to the uses of landscape architects, that the work would be carried out more successfully than if the landscape contractor were alone employed, that architect, landscape architect and client would all benefit and that local nurserymen and contractors would fill their proper offices. Personally the writer believes this would prove successful because he has tried it and it has been successful. The success may be even greater than estimated, because it has been proven (in the writer's case) that though architects indicate their desire to control landscape work, it actually has developed that when architect and landscape



GREEK THEATRE IN THE GARDENS OF SAMUEL UNTERMYER, ESQ., GREYSTONE, N. Y.

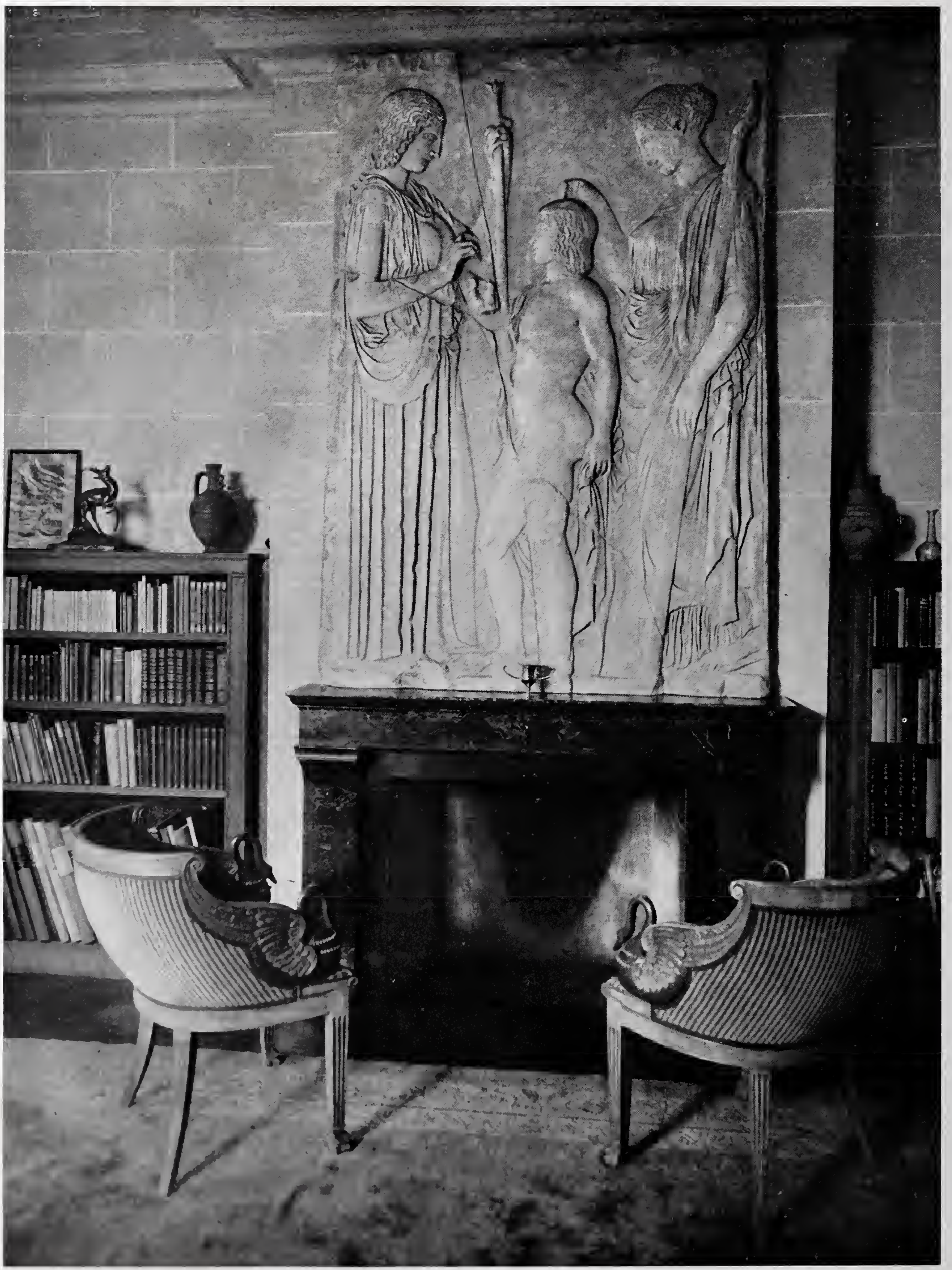
WELLES BOSWORTH, ARCHITECT

THE POINT SHOWN IN PICTURE OVERLOOKS THE HUDSON RIVER AND THE PALISADES architect fully understand each other, the former is only too glad to give the latter full sway. Art and organization may both be advanced by the development of proper relations between architect and landscape architect.

Mr. Flagg speaks also about the improper standards of American architecture and criticizes the practice which aims principally at reproduction, and not development or adaptation. He states that for one hundred years the architecture of this country has been principally composed of flat copies of European styles. I presume he refers largely to country houses in this connection. There is certainly plenty of record to show that we had in America, as early as the 1830s many representations of the Italian villa, Elizabethan manor house, French Chateau and various other distinct European types. Before this period, the simple Colonial style, as it is now known, was invariably employed, and it is the architecture of this era (1750-1820-30) which has proven to be of the most lasting satisfaction. It is probably not because the builders were less copyists during this period, but because the styles they copied were simple and in good taste and easily harmonized with surroundings, that we look back upon this Colonial period as one in which there may have been some really good American architecture. It is also probable that it is the Colonial type which furnishes the basis of what may eventually prove to be the American type. Irrespective of what is copyism and what is not, it seems to the writer that the greatest need in American architecture is the study of those types which will help to produce landscape harmony, in other words so to design buildings that they will fit properly into the landscape, be the latter in the city or in the country. The harmony of the architecture of the French cities is easily apparent,—sometimes there is too much of it, so much that it becomes monotonous. On the other hand, there is a disharmony among our own architectural civic units, which so hurts the senses that there are few portions of an urban area that may be safely travelled if one desires to avoid disagreeable architectural contrasts. Once in a while we notice a building which may strike our eyes as being particularly superior. If we look closer we are more apt to find that it is superior only in contrast with the vast superabundance of wretched specimens in the same neighborhood. Architectural harmony in a city may be an impossible ideal, but the lack of it is one of the great deficiencies in the cities of America. Why are the old towns and villages that still remain unchanged from a century ago, so distinctly attractive? Not necessarily on account of the vast superiority of their architectural specimens, but because there has been an architectural harmony in the type of buildings.

In regard to the country house, this situation of disharmony is not so bad, but as a matter of fact we have just started on the road to recovery from a terrible spell of over-elaboration in the country house. It has been the habit for an owner to choose the type of house he desired to build before he had even purchased his property. Will we ever get away from that spirit? This is the height of abuse of copyism. A villa sits picturesquely on a terraced slope overlooking an Italian sea. A citizen of America admires it and makes up his mind to have the same thing back home. He has it copied and set amid scenery absolutely different from that of the original. This is where architecture and landscape architecture meet and press most closely. Why is not the landscape architect called in before the site for a house has been chosen?

Landscape architecture has also suffered from over-copyism. Our early Colonial estates were most attractive places. Those of the North developed the picturesque landscape and gave little attention to formal effect. Their trees and parks were beautiful, their gardens attractive but nevertheless details only. Those of the South lent a somewhat different air, employing a more or less formal design in the layout of areas adjacent to the buildings, and their gardens were features, and in most cases connected with the dwelling. Yet these formal features were never overdone and in time blended into the informal landscape in a perfectly natural way. From what we know of these old places it is easy to judge that in landscape architecture also, there was more Americanism in Colonial times than later. There has been, however, exceptionally fine work done in landscape architecture during the past thirty years, even outside of the public parks in connection with which we have really outclassed Europe. The many-terraced Italian garden has had its sway, and so has the French garden of elaborate courts and long axial features, and the multitudinous stepping-stoned paths and broad terraces of English origin are also familiar to us. But I know that the landscape architect of this period is also seeking for the less ostentatious and more ruggedly picturesque, and therefore the more truly American, in his design, and it is hoped that his opportunities may be enlarged, as these dubious times go by, rather than restricted. Architects may help greatly in this.



DETAIL OF MANTEL IN OFFICE OF WELLES BOSWORTH, ARCHITECT
WELLES BOSWORTH, ARCHITECT

LEGAL DEPARTMENT

Conducted by

CLINTON H. BLAKE, Jr., of the New York Bar

IN a previous issue, I referred to the recent amendment to the New York Law on the registration of architects. I have before me now a complete copy of the amended law. It will be of interest, not only to those architects whose practice is in the State of New York, but to architects generally who are in sympathy with the increasing tendency to adopt legislation of this character in the interests both of the profession and of the public. The registration laws, insofar as they have been adopted by different states, vary, of course, in character and scope. This New York law, however, is an excellent example of the purpose which underlies the legislation and of the results which the legislation attempts to secure. I am giving the various sections of the law in this issue in full, as adopted, and as the full text cannot be included within the space of one issue, its publication will be completed in the succeeding numbers. The law is known as "Article 7-a of the General Business Law of New York."

THE NEW LAW FOR REGISTRATION OF ARCHITECTS IN NEW YORK STATE

ARTICLE 7-A.

REGISTERED ARCHITECTS

Section	77.	Definitions.
	77-a.	Registered architects.
	78.	Board of examiners and registration.
	79.	Qualifications; examinations; fees.
	79-a.	Certificates.
	79-b.	Violation of article.
	79-c.	Certificate presumptive evidence.
	79-d.	Conviction and prosecution of offenders.
	79-e.	Fees, fines and penalties.

§ 77. *Definitions.* As used in this article:

1. "The education department" means the education department of the state of New York as provided for by the education law.

2. "University" means the University of the State of New York.

3. "Regents" means board of regents of the University of the State of New York.

4. "Board" means the state board of examiners and registration of architects of the state of New York.

5. "Architectural college or school" means any architectural school, college, technology institute or department of a university, registered or accredited by the regents as maintaining a proper architectural standing and as such legally incorporated.

6. "Architect" means one who designs plans for structures and superintends or supervises their construction.

§ 77-a. *Registered architects.* 1. Any person residing in or having a place of business in the state, who, before this article takes effect, shall not have been engaged in the practice of architecture in New York state, under the title architect, shall, before being styled or known as an architect, secure a certificate of his or her qualification to practice under the title architect, as provided by this article. Any person who shall have been engaged in the practice of architecture under the title architect, before this article takes effect, may secure such certificate, in the manner provided by this article. Any person having a certificate pursuant to this article may be styled or known as a registered architect. No other person shall assume such title or use the abbreviation R. A., or any other word or words, letters or figures to indicate that the person using the same is a registered architect, or architect; but his article shall not be construed to prevent persons other than architects from filing applications for building permits or obtaining such permits.

2. Any person claiming the right to practice as architect or registered architect by reason of his or her having been in practice as such prior to the twenty-eighth day of April, nineteen hundred and fifteen, may be required by the board to file an affidavit setting forth the facts and to present such evidence as will satisfy the board that he or she was in bona fide practice previous to such day.

§ 78. *Board of examiners and registration.* There shall be a state board of examiners and registration of architects, who, and their successors, shall be appointed by and hold during the pleasure of the board of regents of the university of the state, and who, subject to the approval and to the rules of the regents, may make rules for the examination and registration of candidates for the certificates provided for by this article. Such board shall be composed of five architects, who have been in active practice in the state of New York for not less than ten years, previous to their appointment, selected by the regents. Such examiners shall be entitled to such compensation for their services under this article as the regents shall determine, not exceeding in the aggregate the amount of fees collected from applicants for certificates and renewal of registration.

§ 79. *Qualifications; examinations; fees.* Any citizen of the United States, or any person who has duly declared his or her intention of becoming such citizen, being at least twenty-one years of age and of good moral character, may apply for examination or certificate under this article, but before securing such certificate shall submit satisfactory evidence of having satisfactorily completed the course in a high school approved by the regents or the equivalent thereof and subsequent thereto of having satisfactorily completed such courses in mathematics, history and one modern language, as are included in the first two years in an institution, approved by the regents, conferring the degree of bachelor of arts or science. Such candidate shall in addition submit satisfactory evidence of at least five years' practical experience in the office or offices of a reputable architect or architects, commencing after the completion of the high school course. The board may accept satisfactory diplomas or certificates from approved institutions covering the course required for examination. Upon complying with the above requirements, the applicant shall satisfactorily pass an examination in such techincal* and professional courses as are established by the board. The board in lieu of examinations may accept satisfactory evidence of any one of the qualifications set forth under either subdivisions one and two of this section.

1. A diploma of graduation or satisfactory certificate from an architectural college or school approved by the regents, together with at least three years' practical experience in the office or offices of a reputable architect or architects; but the three years' experience shall be counted only as beginning at the completion of the course leading to the diploma or certificate; the board may require applicants under this subdivision to furnish satisfactory evidence of knowledge of professional practice.

2. Registration or certification as an architect in another state or country, where the qualifications required for the same are equal to those required in this state.

3. The board in lieu of examinations shall accept satisfactory evidence as to the applicant's character, competency and qualifications, and that he or she has been continuously engaged in the practice of architecture for more than two years next prior to the twenty-eighth day of April, nineteen hundred and fifteen, or that he or she has been actually engaged in the practice of architecture on his or her own account or as a member of a reputable firm or association for more than one year prior to such day; providing the application for such certification shall be made on or before January first, nineteen hundred and twenty-three.

Any architect who has lawfully practiced architecture for a period of more than ten years without the state shall be required to take only a practical examination, which shall be of the nature to be determined by the board.

Every person applying for examination or certificate under this article shall pay a fee of twenty-five dollars to the regents.

§ 79-a. *Certificates.* 1. The result of every examination or other evidence of qualification, as provided by this article, shall be reported to the regents by the board, and a record of the same shall be kept by the regents, and the regents shall, unless deemed otherwise advisable, issue a certificate to every person certified by the board as having passed such examination or as being otherwise qualified to be entitled to receive the same.

(*To be continued*)

LEGAL DECISIONS

A BUILDING contract provided that the heating plant to be installed should be sufficiently effective, so that it would easily heat the building to the agreed temperature. The contractor guaranteed the heating plant on this basis for one year. When the plant was first tested, it seemed satisfactory. The agent for the purchaser of the building, after this first test, accepted the plant at that time, but did not waive in any way the one year guarantee provision. The Trial Court left the case to the jury under instructions which were so worded, that the jury had the right to find and did find that the plant was accepted, after the first test, in the sense of a final acceptance of the plant. On appeal, the Appellate Court held that the court below should not have left the case to the jury on this basis; that the evidence simply warranted the jury in believing that the building was properly heated on the first test and the fact that this was so, and that the owner occupied the building and accepted the plant at that time was not a waiver of the one year guarantee, and did not waive the rights of the owner when it appeared, after the first test and within the one year period thereafter, that the plant did not comply with the requirement of the contract or the terms of the guarantee.

Mayor etc. v. Semmes, 86 Southern (Mississippi) 273.

* * *

WHERE the client claims an agreement on the part of the architect, that the latter should receive no fee unless the cost of the building did not exceed a specified maximum amount, such agreement must be shown by clear and convincing proof where the character and nature of the building are within the client's discretion.

Diball vs. Grunewald, 7 La. 59.

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* *So in original. [Word misspelled.]*

DEPARTMENT OF SPECIFICATIONS

CONCRETE SPECIFICATIONS (*Continued*)

THE next sequential step in the writing of specifications for concrete work will be "Concrete Floors." Concrete floors are laid on earth, on structural slabs and may be made finished concrete floors integrally with the structural slab.

On the assumption that the sub-grade for concrete floors on earth has been excavated to the correct level, the specifications will require that this sub-grade be leveled off and graded where necessary and generally prepared to receive whatever sub-base will be provided. In cases where it is known that the sub-base will consist of sand or gravel, such soil is sufficient to receive the concrete rough slab without an intervening pad. Where the concrete slab would otherwise rest on ordinary earth, on clay, or on some classes of shale, it would be necessary to provide a pad of sand or cinders from six inches to twelve inches thick. If the soil is water-bearing and the sub-base is hard shale or rock, the customary practice is to provide a similar pad in order that drain tile may be placed to relieve water pressure. Where ground water does not occur above the underside of the concrete slab, the pads usually are not required, but the individual case must be studied from this angle to make sure that whatever sub-base or foundation is available will be of the proper character to receive the concrete and to insure its permanency.

Should there be any low places or soft spots in the sub-base, the specifications must require that the low places must be filled and the soft spots cut out and filled with the material that is used for the pad. Where it has been determined that the existing soil will provide a sufficiently firm foundation without the placing of a pad, the specifications, as a matter of precaution, should require that low places that may have occurred because of excavation being carried deeper than necessary must be filled, and that soft spots should be treated as above suggested. It is an axiom of concrete floor work that where excavations have been carried deeper than necessary, they should not be refilled with the excavated material where such filling would be required to carry concrete floors.

The sand, gravel, or cinder pad should be graded to the proper levels and pitches, then rolled and tamped to a compact mass.

The concrete base for floors on earth will vary from four inches thick upward, depending on the use to which the floor is to be put, and water conditions. Where water pressure exists the design of the concrete structural work may have taken into account the mass of concrete entering into the basement floor to provide strength or weight sufficient to resist the water pressure. This fact should be borne in mind as it is necessary at times to make sure that the concrete floor is of strength sufficient to resist a hydrostatic head that would result in hundreds of pounds of pressure. Economic considerations usually determine whether the weight of the concrete is to be made sufficient to resist water pressure, or whether it is to be reinforced in the manner similar to the reinforcement of flat slab floor construction to accomplish the same purpose.

Where certain areas within the main area that is to be covered with the concrete floor are to have finished floors of other material, such as tile, terrazzo, or composition, the drawing should indicate the distance below the finished floor level that the concrete slab is to be placed, and should show whether the rough concrete base will be made thinner, or will simply be depressed a distance to receive the finish floor material, which in the case of tile, usually is three inches.

Often times a boiler room floor will have a low pit, the sides of which may be vertical or inclined. In either case the dwarf wall, if the sides may be called such, would be cast integrally with the general floor base. In other cases basins will be provided below the level of the boiler room floor to receive ejector pumps or to form other pits of a similar character. It is possible that the floor and walls of these pits and bases will be built separately, that is, preceding the laying of the general floor base, but as a usual thing these operations are simultaneous.

The rough concrete base should be leveled off a distance below the finished floor level sufficient to receive the finished cement topping that is to be provided. This topping should be not less than one-half inch thick with a minimum of three-quarters of an inch preferred. The concrete base must be properly graded, of course, and rolled and tamped. As mentioned heretofore the specification should require that the concrete for floors on earth be made somewhat drier than the concrete for the general work. This is an important point, and in the interest of securing substantial floors, should not be neglected. If the specification writer has confidence in the use of any of the available integral mixing compounds that are presumed to render concrete dampproof, he will see that his specification calls for dampproof concrete for the floors that are to be laid on earth. This is a subject that each specification writer should study and determine in his own mind. In any event, the concrete base should be well compacted by the use of heavy iron tampers or rollers.

The above suggestions apply not only to concrete floors, but to concrete walks and the roadway pavement usually encountered in building construction work. Specifications that must be written for the construction of roadways similar to those now being constructed for the highways, must, of course, be patterned after the best known practice, and form a special subject which it is safe to say at present, is not quite as thoroughly understood as it might be.

Some specifications mention the placing of finished topping in the several places of the specification where bases for different types of floor are specified. It seems the best practice, though, to complete the specifications for concrete bases and then write one specification for finished topping that will apply to the various conditions covered.

Where concrete floors are to be provided on structural slabs, the slabs will, of course, be constructed practically level and approximately at the desired level below the finished floor level. These structural slabs may be of concrete, hollow tile arches, combination hollow tile with reinforced concrete joists, or heavy wood construction with a rough wood floor underneath the concrete. The wood floor sub-construction must be assumed to have been designed correctly to support the load and to take care of any inequalities in the shrinking of the timbers. The specification for concrete floors, however, should include a sheet reinforcing to be laid over the rough wood floor and held above it about one inch. This reinforcing may be light, but it should not be as light as the common chicken netting that is so often specified.

The specifications for concrete floors on masonry slabs should require that all pipe work that is to be embedded in the concrete has been laid and accepted by the architect; that the slab surfaces be cleaned with a broom and that any voids in hollow tile be covered over with tile slabs or left open to be filled with concrete. The contractor should be required to check the various finished floor levels with the levels of the rough slab construction to make sure that the conditions of the drawings and specifications will be met in a correct manner. If there are any floor drains such as those in shower stalls, automobile wash racks, or gutter drains required by any industrial use, there should be provided as a part of the drains, a metallic flashing that will be embedded in the concrete. Although the architect himself should make sure that these fittings and numerous other fittings, such as inserts, anchor studs, etc., are in proper position, it is well to have in the concrete floor specifications a clause requiring that the contractor check these, preferably in conference with the architect to make sure that after his work has been installed, it will not be necessary to open it up with unsightly patches resulting. Specifications also should require that the contractor exercise care so as not to displace or injure any of the things that are to be embedded in his work.

All concrete base or fill as it has been called in numerous instances, which is to have a top finish, should be placed not longer than thirty minutes or at the most forty-five minutes before the finished topping is to be placed. This is a rule that should be broken only in those cases where it is known that a contractor will be able to lay the topping in such a manner that it will adhere perfectly to the base. There are contractors who are able to guarantee that topping laid a long time after the base has been laid will adhere to the base, but safe practice requires that the general rule given above be followed. This base should, of course, be graded and leveled and compacted, and be brought to the proper level to receive the topping of specified thickness. It is advisable to include in this specification a clause that the placing of base concrete should stop soon enough in the day's work to permit the placing of topping by the end of that day.

Where roof slabs are built of concrete they will be finished similar to the manner of finishing floors that have a topping made integrally with the slab as discussed hereafter. Where the roof slabs are of tile, and require a concrete fill to receive the finished roof waterproofing, the specifications for this fill should be similar to those for the general concrete floors.

In the matter of sidewalks, the specifications for those on earth have been discussed. Where sidewalks occur on structural slabs, the conditions generally surrounding such construction are similar to those encountered in the placing of finished floors on concrete or tile slabs. Where the sidewalks are laid on slabs such construction is usually required because of finished basement spaces that must of necessity be protected from leakage of water or dampness that may be the result of condensation. The waterproofing of sidewalk slab may be accomplished by any of the waterproofing methods discussed in the last previous issue of this Department. If membraneous waterproofing is used, it is advisable to lay over the membrane, a cement mortar protection at least one-half inch thick, this mortar coat being reinforced with light weight mesh such as chicken netting. In a number of cases the structural slabs do not cover the complete distance that is to be overlaid with finished walk surfaces, the portions of the walk not occurring over basement spaces being laid directly on earth. Where such a condition occurs, it is suggested that the specification require the placing of reinforcing of a character sufficient to prevent shearing of concrete along the line of demarkation between structural slab base and earth base. This reinforcing should extend at least one foot beyond and at right angles to the probable line of cleavage, but it is well to have some engineering computation made by the individual specification writer.

Where sidewalk lights or vault lights, as they are sometimes called, are to be placed, if these lights are to be made in precast slabs that are becoming so popular these days, it is probable that the thickness of the slab is not as great as the thickness of the finished sidewalk. In this case the walk contractor should be required to build low curbs around the light openings in the rough slab to receive the bedding for the precast light slab, or the rough curbs should be provided in the rough slab construction.

Often times it is desired to extend the walk from the building line to the curb line, in which case it is often necessary to reconstruct the curb, and if the character of the paving requires, reconstruct the gutter flagging. It is unusual to find any village or city of such short-sighted policy that it does not require the construction of curbs and gutter flaggings to be in accordance with a predetermined standard. This matter should be determined by the specification writer so that his specifications will call for a curb and gutter flagging either acceptable to the authorities having jurisdiction, or at least of a type acceptable to similar authorities in his home town.

The specifications for the placing of fill for the sidewalk should be similar to those for the general floor fill with the exception that joints in the base should be provided to guard against unsightly cracking of the finished walk surfaces. The joints should be formed by wedge-shaped boards of a width equal to the finished thickness of the walk, and they should be as narrow as possible but not less than one-quarter inch at the bottom.

The specifications for sidewalk lights, whether precast or cast in place will generally follow the standard specifications of a particular manufacturer, or will consist of a composite specification that will permit of free competition among the manufacturers of such items that are acceptable to the architect. It is not possible to say a very great deal respecting this construction except that the specification writer should be guided entirely by past performances of the manufacture of the system to be used. The specifications should not be written without knowledge of the available types of sidewalk lights and if it seems unlikely that the desired type will be available, some effort should be made to establish a certain minimum in strength and a minimum standard in the selection of glass that will at least assure average good work. The sidewalk light systems of former days have not withstood pedestrian usage in a very commendable manner, but during the past few years the manufacture of this class of building equipment has increased in excellence. It seems possible to say now that many of the former difficulties that were traceable to imperfect glass can now be overcome to a very great extent by either of the two methods for the testing of a piece of glass, that are now available. The specification should require some sort of test for the glass and should require that all cement be reground Portland cement.

The specifications for the finished topping for the various floor and walk surfaces discussed in this article may be written in a somewhat general form with specific references to any general cases that may occur. As a general rule, finished cement topping is not made as well as it could be made for the reason that the workmanship is quite deficient even though the material may be of the best and even though the contractor may exert his utmost ability in the production of the work. It is because of this that the specification writer should be extremely careful to be letter perfect in the specifications for finished cement topping even though they may be given in general terms only. As mentioned heretofore, one of the prime requisites for the placing of topping is that it be laid immediately after the concrete base directly underneath has been laid, and the specification should prohibit the placing of topping after the base has taken initial set. Such a clause will bear repeating even though the subject has been covered in the specifications for the placing of the concrete base.

The topping should be placed as dry as screeding will permit and as soon as a sufficient area has been covered and the finished mortar has taken initial set. The work in any specific space should be completed before daylight has passed, as the placing of topping under the kind of illumination generally available in building construction is not desired, especially where good finish is expected. The topping should be troweled to a perfectly smooth, plane surface, without trowel marks or blemish of any kind and should be immediately barricaded against intrusion. As soon as troweling in any space has progressed sufficiently, that space should be covered with sawdust that is free from rosin or sap, and this sawdust should be kept wet for a period of at least ten days.

Topping for roof surfaces need not be finished so well as it is only necessary to require that ridges or depressions that would be harmful to the finished roof surfaces do not occur. Unless the roof is to be absolutely dead level, a few concave or convex spots will not be very objectionable.

It is often desired to provide for sidewalk surfaces or even for some interior floor surfaces, a true non-slipping surface, which may be obtained by abrasive grains that have been proved efficient. It is customary in such instances to provide that these grains be dusted over and troweled into the cement topping, rather than to call for them to be mixed into the mortar where the greater part of them will not be of great surface in producing the finish desired.

The general joints in walk surfaces, together with joints around sidewalk lights, and against the building wall where sub-sidewalk spaces occur,

(Concluded on page 41)

DEPARTMENT OF ARCHITECTURAL ENGINEERING

SIMPLIFIED DESIGNING METHODS

Description of an accurate mechanical solution of statically indeterminate structures by use of paper models and special gages

STATICS is a science based upon the laws of equilibrium. When the laws of equilibrium are sufficient for the determination of the supports of a structure it is said to be statically determinate with respect to the supports. When all the forces may be determined without reference to the elasticity of the material of which the structure is composed it is said to be statically determinate. When the forces acting at the joints of a structure may be found by dividing it up into parts, not necessarily elements of parts, it is said to be statically determinate.

When several elements are connected together to form a rigid body the forces acting at the points of connection are internal forces. When these internal forces cannot be determined by dividing the structure up into parts it is said to be statically indeterminate. It may, however, as a structure, be statically determinate with respect to the supports.

The analysis of a statically indeterminate structure is tedious. For that reason there is a tendency on the part of many designers, especially in English speaking countries, to avoid forms which are favored on the continent of Europe. Statically indeterminate structures are more rigid and are more economical in material than statically determinate structures, therefore anything that will lessen the amount of computation and insure accuracy should be welcomed by structural designers. Professor George Erle Beggs, Associate Professor of Civil Engineering, Princeton University, proposes to accomplish the desired result by the use of paper models and presented an interesting paper on the subject at the 18th annual meeting of the American Concrete Institute in 1922.

The use of models in checking the result of engineering calculations is not new. One of the early examples of this method was in connection with the Brittania Bridge in England, built by Stevenson in 1848. It is a tubular plate bridge with two spans of 460 ft. and two of 230 ft. The girders were proportioned as simple beams but were connected to form a continuous girder in order to increase the carrying capacity and by this means add to the factor of safety. This was the first important metal bridge of the beam type and was also the first continuous girder bridge. The designer made a small model on which a number of tests were made and thus determined the position of the points of contraflexure of the elastic line. This line he regarded as fixed and each span was divided into two cantilevers and a central beam. Incidentally he laid a foundation for the later development of the cantilever bridge in which there are hinges at the points of contraflexure.

In the intervening years methods of mathematical analysis were so well developed that models ceased to be more than pieces of apparatus for demonstration use. In the design of continuous beams the theories of deflection and least work were used by means of which ordinates were computed for influence lines.

The method of influence lines is gradually coming into general use for it facilitates computation in some cases. Weyrauch in 1873 outlined the method and it is believed the first mention of it in the English language was in 1887, in a paper by Professor Swain before the American Society of Civil Engineers. An influence line for any given point *A* on a beam or truss is a line, the ordinate of which at any point *B* gives the bending moment, shear or similar quantity at *A* when a unit load is placed at *B*. A very good presentation of the subject of influence lines for simple beams and trusses is given in the Kidder-Nolan handbook.

Professor Beggs in his paper stated that in the summer of 1916 his attention was directed to the problem of the deflections and stresses of the triple span continuous trusses of the new B. & L. E. R. R. bridge over the Alleghany River. One of these trusses is shown in Fig. 1. On account of the various conditions of loading for which it was necessary to calculate the four truss reactions, it was considered advantageous to construct their influence lines, after calculating their ordinates by the theories of deflection and least work. These influence lines, plotted in Fig. 1, resembled the elastic curves of continuous beams fastened at three supports and deflected a unit distance at the remaining support for whose reaction the influence line was drawn.

To determine the accuracy of this observation, a 10-ft. pole and three nails were used. To draw the influence line for R_1 the pole was restrained by single nails at R_2, R_3, R_4 and deflected at R_1, a distance to scale 1000 lbs. The ordinates to this elastic curve were measured. The operation was performed at each support in succession. The comparison of values obtained by this crude mechanical apparatus and by exact theory are given in Fig. 2. The agreement of values is seen to be remarkably good.

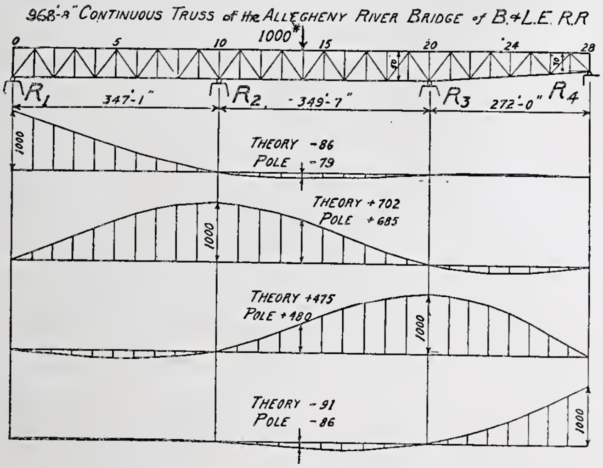


Fig. 1. The first experiment in using a flexible pole to draw influence lines. Work done by Professor Beggs in 1916

COMPARISON OF INFLUENCE LINE ORDINATES
OBTAINED BY THEORY AND BY POLE
FOR THE 968-8" CONTINUOUS TRUSS OF B.&L.E BR.
CALCULATED FOR A UNIT LOAD OF 1000#

LOADED POINT	R1		R2		R3		R4	
	THEORY	POLE	THEORY	POLE	THEORY	POLE	THEORY	POLE
0	1000	1000	0	0	0	0	0	0
1	+ 881	879	+ 142	149	− 28	35	+ 5	6
2	750	754	287	307	− 55	71	8	13
3	641	633	428	450	− 83	104	13	22
4	526	518	561	585	− 103	128	17	27
5	414	404	687	717	− 120	148	20	29
6	309	302	798	825	− 128	150	21	29
7	216	209	880	910	− 113	139	17	30
8	134	124	942	977	− 89	115	13	22
9	62	57	981	1008	− 49	68	7	12
10	0	0	1000	1000	0	0	0	0
11	− 37	− 40	956	965	+ 105	102	− 24	− 25
12	− 64	− 63	890	894	223	218	− 49	− 46
13	− 81	− 78	807	798	346	345	− 71	− 68
14	− 86	− 79	702	685	475	480	− 91	− 86
15	− 79	− 75	573	560	613	619	− 107	− 100
16	− 67	− 63	445	435	736	738	− 115	− 109
17	− 49	− 48	313	312	845	842	− 109	− 105
18	− 32	− 32	195	187	924	930	− 88	− 89
19	− 13	− 13	85	82	980	981	− 52	− 54
20	0	0	0	0	1000	1000	0	0
21	+ 9	9	− 58	− 51	974	965	+ 74	74
22	15	17	− 97	− 80	917	895	165	169
23	19	18	− 121	− 95	834	792	268	282
24	18	18	− 120	− 95	710	665	392	409
25	16	17	− 105	− 79	557	520	531	545
26	11	12	− 75	− 55	381	350	682	690
27	8	7	− 45	− 32	201	180	836	840
28	0	0	0	0	0	0	1000	1000

Fig. 2. A study of the data in the above table shows that the results obtained by the pole are safe

Three years later, in the summer of 1919, the attention of R. Fleming of the American Bridge Company was called to this method of solution, with the result that he carefully computed the reactions of the three-span continuous beam of uniform section shown in Fig. 3, and published the solution in the *Engineering News-Record*, August 28, 1919. For the mechanical method he used a 3-ft. spline with ordinary pins for supports. The influence lines were assumed to correspond to the elastic curves produced by bending the spline a distance unity from each of the four supports in succession as shown. The reactions for the actual loadings were then found by summing algebraically the loads times their corresponding ordinates. The closeness with which the reactions sum to the total load is remarkable and the comparison between reactions obtained by theory and by spline is practically satisfactory.

To Mr. Fleming, at that time, Professor Beggs stated the possibility of extending this mechanical method to the solution of indeterminate frames. Does not the layman estimate the severity of stress in an elastic structure by observation of its distortion under load,—the "give and swell" of the members as one man expressed it? Why then should not the engineer closely observe the deflections of model elastic structures, and so estimate their reactions, moments, shears and thrusts, and thus avoid the derivation or the application of such laborious and questionable formulas as are at times quoted in treatises? Such tedious calculations are most disheartening, and lead the so-called "practical" man to make his best guess. Nature solves such problems in actual structures instantly and accurately. Could not the engineer enlist nature as his ally, and so eliminate much of the mathematical work incident to the solution of problems in indeterminate structures?

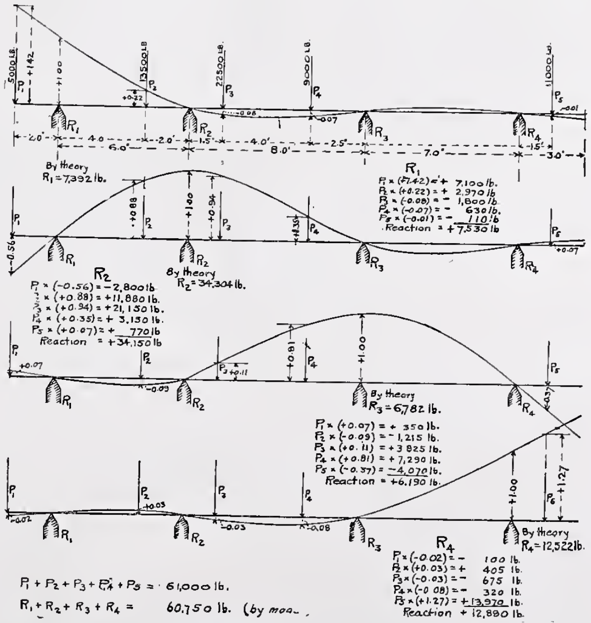


Fig. 3. Results of experiment in 1919 by R. Fleming to check work done by Professor Beggs

The fundamental principle of any mechanical solution is Maxwell's Theory of Reciprocal Deflections which establishes a mutual relation between any two points in a structure. This theory shows that when a number of loads rest upon a beam the deflection at any point is equal to the sum of the deflections at this point due to each of the loads acting separately. Also, a force applied to any part of a structure exercises an effect, the amount of which may be computed, on every part of the structure.

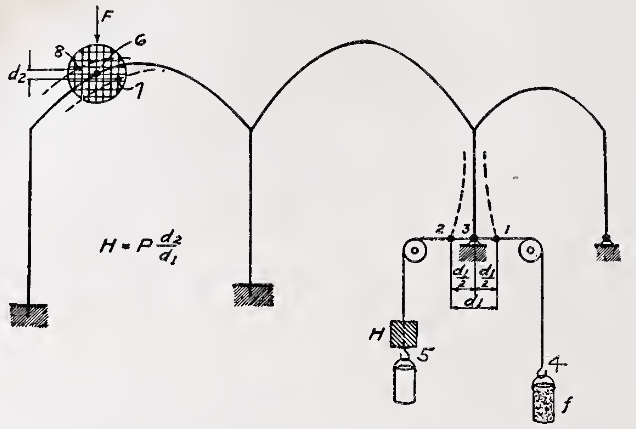


Fig. 4. Illustrating the principles. A model used to show movements in frame with two fixed columns, one hinged column and one column with roller bearing

Consider the very complicated structure shown in Fig. 4 and assume that this figure represents the actual full-sized structure. Let it be required to find the horizontal thrust at the hinge at the foot of the third column caused by a load *P* on the first arch. Assume for the sake of argument that the third support is changed from hinged to roller bearing, so that horizontal motion may occur freely. Attach to the lower end of the column a cable which carries a weight *H*. This weight is such that it holds the column from deflecting horizontally when the load *P* rests on the arch. Now attach to the right-hand cable a pail as shown, to carry a very small load equal to *f* pounds of sand. From the weight *H* hang an empty pail.

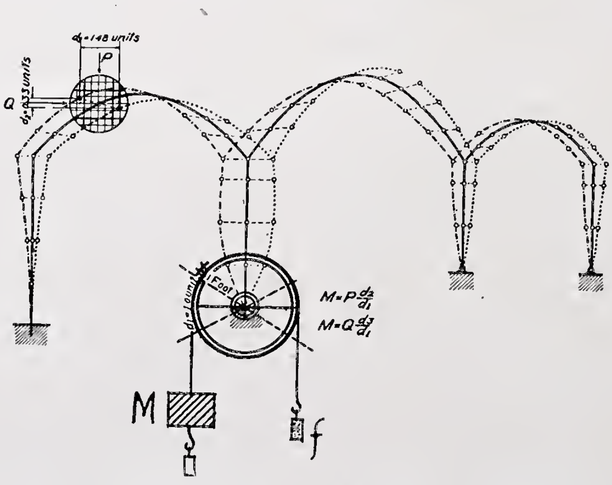


Fig. 5. Illustrating the principles. A model with one fixed and three hinged columns

The foot of the column deflects a small distance, $0.5d_1$ from point *3* to point *1*, and at the same time the load *P* is moved from point *6* to some point 7. Transfer the sand *f* to the pail at the left of *3*. The column deflects a horizontal distance d_1 from *1* to *2*, while the load *P* moves from point *7* to *8*. From Maxwell's Theorem, it follows that

$$H = P \frac{d_2}{d_1}$$

It is to be noted that in general the value d_2 is the component of the deflection of P in the direction of *P*, in this case vertical. It is evident from this equation that *H* becomes known as soon as the ratio d_2/d_1, is evaluated, and the load *P* specified. It is further apparent that this ratio of deflections may be obtained by applying to an elastic unloaded model of the actual structure a small deflection d_1 and measuring by accurate means the corresponding deflection d_2. There is an advantage in introducing the deflection d_1 half to the right and half to the left of the mean position, for the frame is distorted from its geometric position less than if the deflection were all on the same side of the mean geometric position.

Assume in the second instance that it is desired to know the bending moment at the foot of the second column due to a load *P* on the first arch. Assume that the connection of this second column is changed from fixed to hinged, Fig. 5. Let the hinge pin be a shaft keyed to the foot of this column and turning freely in a bearing that is fixed to the foundation. On this same shaft mount a wheel of 1-ft. radius as shown. Support by a cable wound on the circumference of this wheel a weight *M* of such value that the foot of this column is not rotated from its normal position when the load *P* rests on the first arch. Attach to the right-hand cable a pail carrying a very small load *f* pounds of sand, and from the weight *M*, hang an empty pail as shown.

The circumference of the wheel deflects a small distance $0.5d_1$ clockwise, and at the same time the load *P* is moved downward and toward the right. The motion shown by the drawing is greatly magnified. Now transfer the sand to the empty pail. The circumference of the wheel will deflect a distance d_1 counter clockwise, and at the same time the load *P* will move upward and toward the left, the component of its motion in the direction of *P* being d_2. From Maxwell's Theorem it follows that

$$M = P \frac{d_2}{d_1}$$

It is evident that the value of the weight M that will produce elastic equilibrium becomes known as soon as the ratio of d_2 to d_1 is evaluated and the load P specified. It is also apparent that this ratio may be obtained by applying to an elastic unloaded model of this structure a correspondingly small rotative deflection d_1 and measuring by accurate means the corresponding deflection d_2.

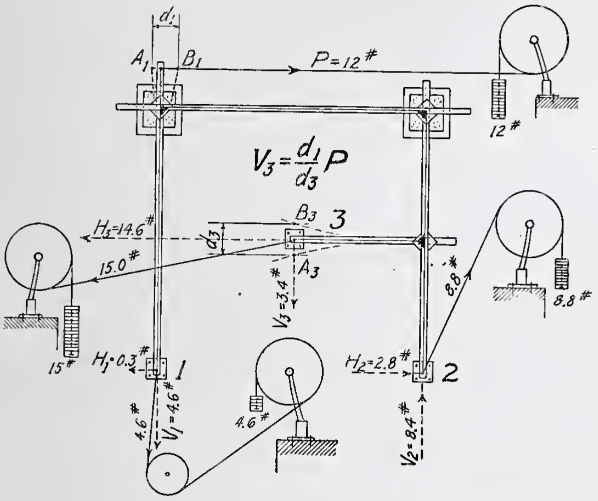


Fig. 6. A model made of wood used in the 1920 experiments to prove the truth of the principles on which the new designing methods are based

It is further clear that the value of the weight M is numerically equal to the bending moment at the foot of the second column, since the radius of the wheel is unity. As before and for the same reason, the deflection d_1 is applied half on either side from the mean geometric position.

Not wishing to rely entirely on such philosophical considerations, Professor Beggs decided in January, 1920, to check the above principle by a practical test. A model of an indeterminate structure of the form shown in Fig. 6 was constructed. The frame was made of wood strips about ⅝ by ⅞ in., the columns and main horizontal member being 50 in. in length center to center of connections. Metal gussets and screws fastened the bars together. The three-hinged frame was supported in a horizontal position on the floor and floated on ball bearings that moved freely between glass plates. While measuring deflections no weights were applied to the structure. In order to determine by deflections the value of V_3 at support *3* that would be caused by a load P equal to 12 lb., the ratio d_2/d_1 was first determined as follows: the pin at *3* was removed and the point *3* of frame forced to deflect vertically upward by an amount $0.5d_3$ and then vertically downward by the same amount. The corresponding motion of B_1 was to A_1, and its deflection d_1 was measured.

According to the principle previously explained

$$V = \frac{d_1}{d_3}\ 12\ lb.$$

in which equation the ratio of the known values d_1 and d_3 was such that V_3 was calculated to be *3.4 lb.* By a similar method H_3 was calculated to be *14.6* lb. The hinge reaction at *3* for P equal to *12* lb. was thus completely determined, its value *15* lb. being equal to

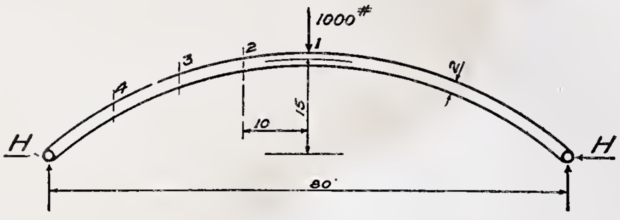
$$\sqrt{14.6^2 + 3.4^2}$$

The pin was replaced in hinge *3*. The load P equal to *12* lb. was applied by means of a counterweight acting through a cord wound over a bicycle wheel as shown in Fig. 6. A force of 15 lb. was similarly applied in the line of the resultant of H_3 and V_3 by a cord attached to a screw in the bar close to point *3*. The pin at hinge *3* was then removed. "To my great satisfaction," said Prof. Beggs, "no deflection occurred upon removal of the pin." The reaction of *15* lb. at hinge *3* as determined mechanically, was therefore correct, for it produced both static and elastic equilibrium. Similarly the reactions at hinges *1* and *2* were determined, and their correctness tested. The three reactions as determined entirely by deflection measurements are seen to satisfy very well the three laws of statical equilibrium. The small errors may be chargeable to the crudeness of the apparatus.

In order to reduce the scale of the models and at the same time to improve the accuracy of the observations, it was soon decided to make the models of celluloid, and to read the deflections by use of micrometer microscopes of the type shown in Fig. 7. This microscope will read directly to 1/16000 of an inch. It is a stock pattern except for the cross section lining in the field of view.

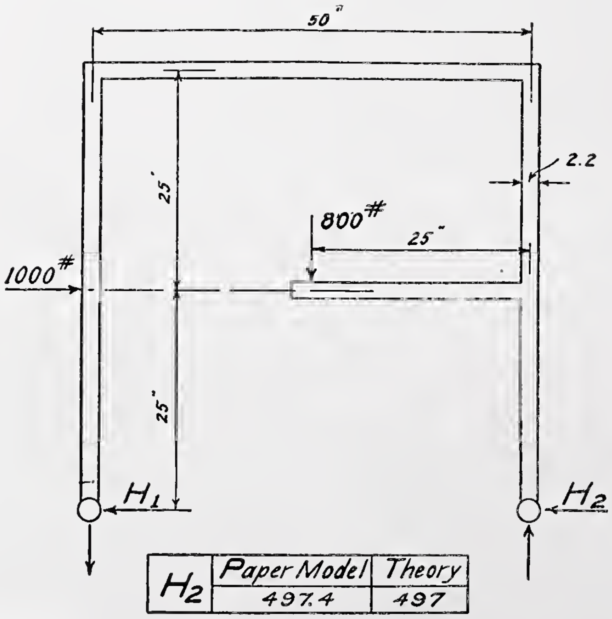
Fig. 7. The microscope used by Prof. Beggs. It is a stock pattern with cross-section ruling placed in the field of view to measure small movements

The first structure solved by aid of the microscope was an arch of 60 ft. span made of celluloid to a scale of 10 ft. to one inch. The experiment was most encouraging but difficulty was encountered in making models of celluloid. At the suggestion of one of his students Prof. Beggs decided to use heavy paper or cardboard for model making. The thickness chosen can be cut with a few heavy strokes of the penknife. Needles pressed through the paper make very satisfactory hinges. A model of the two-hinged arch shown in Fig. 8 was made of paper to scale span equal to 20 in. The values of *H* obtained from the deflections of this paper model read through the microscope compare very closely with those given by the common theory. In Fig. 9 the agreement is very close. Other examples were given in the paper which are omitted here to save space.



1000# at	H	
	Model	Theory
1	1000	1000
2	920	930
3	720	720
4	420	400

Fig. 8. Results obtained with a paper model of arch with hinged ends

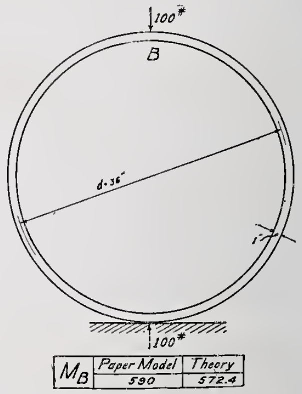


H2	Paper Model	Theory
	497.4	497

Fig. 9. Results obtained with paper model of frame similar to frame shown in Fig. 6

The difference between results by model and theory for the ring in Fig. 10 may be partly chargeable to the approximations in the mathematical analysis. In any case the error is negligible for practical purposes.

The paper model of the arch with fixed ends shown in Fig. 11 was made to scale with span equal to 20 in. The right end was fastened to the drawing board and the left end glued to a movable block. The model was floated on small ball bearings. Unit moment, thrust and shear deformations were introduced in succession at the left support, where one micrometer microscope was used to measure the motion of the foundation. The second microscope was used to read the vertical components of the deflections of the rib. These latter deflections are directly proportional to the influence line ordinates for the moment, shear and thrust at the left support of the arch. The small variation between the dotted and full influence lines in Fig. 11 indicates the close agreement of the values read from the paper model with those obtained by theory.



M_B	Paper Model	Theory
	590	572.4

Fig. 10. Model of ring tested to prove a theory which is an example of sound reasoning

In order to bring the theory into agreement with the results read from the model, it was necessary to apply to the values obtained by theory the correction for thrust shortening. The two solutions agree quite closely enough for practical design. There are strong reasons for believing that the mechanical solution is fully as near the truth as is the theoretical solution. In the paper referred to, Professor Beggs presented a table showing the agreement between theory and experiment for each ordinate of the arch.

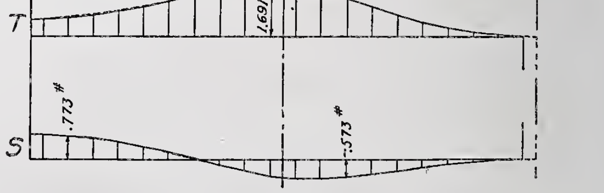


Fig. 11. Comparison of results obtained by theory and by paper model for Arch No. 15, Engineering News, June 2, 1910. Effect of thrust shortening included in both cases

(*To be continued*)

ELECTRICITY IN THE HOUSE

VII—HALLS, STAIRS AND PORCH

BY M. O. WHITTON

ONE'S theoretical house having now been wired from garret to cellar, but one further phase of the subject remains to be covered, and that is the adequate wiring of hall, stair and porch. The subject is not a very wide one, and yet it includes discussion of some of the most ingenious applications of electricity to the problems of lighting and living.

For instance, there is the matter of adequately fitting out the entrance to a house, be it city or suburban; that is, there are front steps to be lighted, usually in connection either with a country entrance porch, or a city vestibule. In the former case, there may be a ceiling light in the porch, or lantern brackets may be used adjacent to the steps themselves, depending on the style of the house; in the latter case, the most generally accepted solution is some sort of ceiling fixture to be used in connection with the vestibule roof. In the city, this light will generally be controlled only from a switch inside the door, but in a suburban location, it is better to use a three-way switch, so that the light can be controlled either from within or without. This sort of illumination does not generally demand a high-powered lamp, nor is that advisable, since in many instances in connection with the family's social life, these outer lights will often be kept going well on into the night.

Some wires, some buttons and a switch or two in combination with appropriate furnishings make the home porch a formidable competitor of country vacation resorts. The wire should go through the rug. It is dangerous as shown here

Once within doors, the question of hall lighting is encountered. Now the term "hall" is in itself a little ambiguous, as it may be employed to desiguate a hall in its simplest terms, which is a small entrance way or passage leading to the stairs, or it may be applied to a considerable area, requiring the same treatment and consideration as a reception room. Taking first the term "hall" in its narrower sense, one finds that the first need is for adequate and flexible lighting, since hall lighting usually serves to illuminate at least the lower portion of the stairs. There then arise the apparently contradictory requirements of ample light for convenience during the usual living hours, and that of a smaller light to be left going possibly all night, as a measure of safety. This double demand can be simply satisfied by the use of a fixture having two outlets, in one of which is inserted a high-powered bulb for ordinary use, and in the other of which a small unit is employed to serve as a night light. In turn, this arrangement calls for two wiring circuits and two switches, so that the householder can at will command either the large or the small light.

A hall lighted to bring out the architectural details with comfort to the eyes

What type of fixture is here designated may well be left to the architect who has in mind the particular problems of a particular house, since as far as illumination is concerned, either a hanging fixture or wall brackets can be employed with equal satisfaction, though in general the hanging fixture will be preferred in halls having high ceilings. It is true that one other form of lighting is possible, though one would hardly mention it except as the warning of a horrible example. A certain war millionaire in this country, unlearned and unlettered, when building him a house, demanded that all his halls throughout be lighted by floor lamps, because he had heard that floor lamps were in vogue. "And," said he, "everything here is going to be up-to-date." Just how many casualties in the shape of broken shins and crockery have resulted as a result of this innovation, the writer knows not, but so far none of his more discriminating neighbors has followed his example. On the other hand, where a hall broadens out into a good-sized reception room, there is no reason why the usual ceiling or bracket lighting should not be supplemented by lamp lighting, although a table and table lamp, rather than a floor lamp would undoubtedly suggest themselves in the greater number of cases.

An example of three-way switching so lights may be turned on and off from floors above and below

Hall and stair lighting present a situation in which three-way switching will be found of greatest convenience. The first switch would naturally be placed directly near the entrance door, and the second switch on the landing after the first flight has been traversed. In this way a person entering the house may light himself up, and then extinguish the light after him; or the process may be exactly reversed in the case of a person leaving the house. Similarly, in a house several stories high, each floor may be treated as a unit in exactly the same way, so that it is possible to ascend the full height of the dwelling, with light all the way, and yet leave no light behind, unless it is so desired. Again, in general, it may be remarked that the smaller torch brackets, many times in the general style of candle and sconce, and calling for comparatively low-powered lamps or bulbs covered with frosted glass, are usually found both suitable and practical for hall lighting.

Even where the hall is strictly a hall and no more, at least one outlet per floor should be allowed for cleaning purposes, and so located that a vacuum cleaner can be employed upon the stairs, especially in those houses where stair carpeting, rugs or runners are employed. And where the hall, either on the first or the second floor, serves either as a reception or an informal sitting room, this is even more true, for in this case, other electric appliances have to be considered, such as a possible use of a fan in Summer, or an electric radiator in Winter.

In most country or suburban houses, there is generally a large piazza in addition to the regulation entrance porch. Where houses are designed for all-the-year use, the larger piazza is frequently glassed in for bad weather, screened in Summer, and practically used as an exterior living room, in which case, its electric wiring should be treated almost as if it were a part of the house enclosure. In any event, lighting should be arranged either from overhead fixtures, from wall brackets, or by means of tall porch lamps, or the smaller lamps placed upon tables. Except where porches are carefully screened in Summer, either lamps or brackets will be found more practical, for otherwise the lighting will draw innumerable insects around the ceiling fixtures, which then cannot be cleaned readily.

How much wiring, besides lighting, is allotted to the porch will depend on how far it is employed as an outdoor sitting room. In many families, it is the custom to take breakfast or supper on the porch, in addition to serving refreshments there on occasions of informal entertaining. For such purposes, a wired tea-wagon or porch tables at which the smaller electrical cooking devices could be operated, will become a very popular piece of porch furniture. Where it is not desired to go to this length, at least one double baseboard outlet should be provided, to supply a source of current for cleaning, and for the other supplementary uses of electricity; if a family wishes to make a feature of its outdoor meals or porch parties, the equipment could be increased, or duplicated at some distance, so as to make at least two centers of supply.

Before parting company with our well wired house, let us not forget the attic, an adjunct possessed by some city and by most suburban dwellings. As the attic is chiefly used for storage purposes, the only reason for wiring it is to secure adequate lighting whenever it is necessary to commit furniture or trunks to the garret, or conversely, to remove goods and chattels therefrom. Lighting in the attic, then, should be safe, but it need not be beautiful, and the same sort of utility wiring recommended for the cellar will also be found satisfactory for the opposite extremity of the house. A few bulbs should be noted here and there, the number depending on the size of the area concerned; one of these lights, however, should be switched from the attic stairs, to obviate groping around in garret dimness, and stumbling over unseen obstacles, while reaching for the pull chain. Should the space involved warrant having several lights, the others may well be locally controlled. As an element of safety, in a low-ceilinged attic, wire guards for the bulbs are recommended to prevent their possible breakage when furniture and trunks are moved around.

There are doubtless some readers of this series on house wiring, of which this is the concluding number, who will consider that undue emphasis is placed upon making provision for the supplementary uses of electricity, outside of the regular demand for light and power. The enormous, and steadily increasing extent of the use of electrical appliances of all kinds is something realized most clearly by those in closest touch with the situation. The electric industry is not forcing convenience outlets upon the public; the public is forcing them upon the owners of dwelling and apartment-house property. For instance, a survey made during March of the present year shows that in one of the finest apartment houses in New York City, located on Central Park West, the electric load as represented by the electric appliances used by the tenants is actually greater than that derived from lighting or power. In actual figures, the lighting of the building totalled 114.39 kilowatts; the power load was 138 kilowatts, and the appliance load amounted to 148.49 kilowatts. Among the appliances employed by the tenants in this apartment (which, by the way, furnishes vacuum cleaner service) are 42 flat irons; 38 electric stoves; 36 grills; 23 percolators; 18 toasters, besides a smaller number of egg boilers, heating pads, heaters, hair curlers, vibrators, hair dryers, sewing machines, ovens, violet ray outfits, waffle irons, hot plates and electric fans. The situation revealed by such a report as this is one deserving careful consideration by all architects interested in the design of houses or apartments.

It is becoming increasingly evident that some day all houses will be wired for power as well as for light. Savings and reductions in cost estimates can no longer be figured on the wiring which is now as important as the item of foundations.

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THE Board of Governors represent memberships in the following national societies: American Institute of Architects; American Society of Civil Engineers; American Society of Mechanical Engineers; American Institute of Electrical Engineers; American Society for Testing Materials; American Concrete Institute; American Iron and Steel Electrical Engineers; which indicates the scope of activities of The American Specification Institute.

THE AMERICAN ARCHITECT AND THE ARCHITECTURAL REVIEW *has gratuitously set apart this section for use by The American Specification Institute. The Editors and Publishers assume no responsibility for any statements made, or opinions expressed.*

The purpose, simply stated, is to afford an organization which, it is believed, will become a most important element in architectural practice and building operations, a medium through which it may, without expense to itself, reach a class of readers that are most intimately identified with the field of the activities of The American Specification Institute.

Publishers, THE AMERICAN ARCHITECT AND
THE ARCHITECTURAL REVIEW.

BULLETIN No. 8, which is a revision of Bulletin No. 6, has just been distributed to members. The subject of this bulletin is Standard Specification For Concrete and Reinforced Concrete (Super-Structure). The outline of this specification is as follows:

GENERAL CONDITIONS
SCOPE OF CONTRACT
WORK NOT INCLUDED
CO-OPERATION WITH OTHER CONTRACTORS
QUALITY OF WORKMANSHIP
QUALITY OF MATERIALS
  Types of concrete
  Portland cement
  Fine aggregate
    Grading
    Sieve analysis
    Decantation test
    Organic impurities
  Coarse aggregate
  Crushed slag
    Grading
    Sieve analysis
  Water
TESTING
  Testing laboratory
  Molds and sieves
  Slump tests
  Compression test specimens
  Number of specimens
  Sampling
STORAGE OF CEMENT
STORAGE OF AGGREGATES
STORAGE OF REINFORCEMENT MATERIALS
SAMPLES OF MATERIALS
SURVEY, GRADES, BENCH MARKS
TEMPORARY WALKS, DANGER LIGHTS, BARRICADES
PUBLIC PROTECTION
EXTENT OF SUB-STRUCTURAL WORK
CUTTING AND CHANNELLING WALLS AND FOOTINGS OF ADJOINING STRUCTURES
FORMS
  Description
  Type of forms
  Design of forms
  Fabrication of forms
  Moldings
  Inspection of forms
HANGING WIRES
VAULT DOOR OPENINGS
REINFORCING STEEL
  Cleaning
  Bending
  Straightening
  Placing
  Approval of bar spaces and supports
  Offsets in column reinforcement
  Future bonding
  Fireproofing of reinforcing steel
STRUCTURAL STEEL
  Cleaning
  Erection of structural steel
  Fireproofing of structural steel
SLEEVES AND HOLES
SASH SLOTS
ANCHORS, INSERTS, SHELF ANGLES
EMBEDDED PIPES
BRICK TIES
INSPECTION AND APPROVAL
CONCRETE PROPORTIONS
  Unit of Measure
  Method of measuring
  Determination of proportions
  Increase of cement ratio
  Change of aggregate ratios
  Consistency of concrete
COMPENSATION FOR ADDITIONAL CEMENT
WATER SUPPLY
MIXING OF CONCRETE
  Machine mixing
  Time of mixing
  Hand mixing
  Retempering
DAMPPROOFING CONCRETE

- DEPOSITING OF CONCRETE
  - Cleaning mixer and equipment
  - Handling
  - Compacting
  - Depositing continuously
  - Bonding
- CONSTRUCTION JOINTS
  - Type
  - Joints in columns
  - Joints in floors
  - Monolithic construction
- REINFORCED CONCRETE LINTELS
- REMOVABLE SLABS
- CONCRETE BACKING FOR STONE AND TERRA COTTA
- FLASHING RAGGLES
- CONCRETE WALL COPINGS
- BUMPER CURBS
- EXPANSION JOINTS
- PROTECTION OF GREEN CONCRETE
  - Moistening
  - Cold weather
- REMOVAL OF FORMS
- MECHANICAL SURFACING OF CONCRETE
  - Rubbed finish—wooden floats
  - Rubbed finish — carborundum or cement bricks
  - Tooled finish
- PLASTERING UNDER SIDE OF SHEET-REINFORCED SLABS
- TESTS OF CONCRETE CONSTRUCTION
- WATERPROOFING OF SUBGRADE CONCRETE
  - Methods
  - Protection of waterproofing
- STONE CONCRETE FLOOR FILL
- CINDER CONCRETE FLOOR FILL
- CINDER ROOF FILL
- CONCRETE FLOORS ON EARTH
  - Sub-base
  - Floor
- SURFACE FINISHERS
  - Preparation
  - Top surfaces not subject to wear
  - Surfaces to receive mastic floors
  - Surfaces to receive terrazzo
  - Surfaces to receive mastic floor paint
  - Surfaces to receive composition floors
  - Wearing surfaces
  - Wearing surfaces integral with base
  - Wearing surfaces not integral with base
  - Stair treads, landings, steps
  - Curing
  - Roof surfaces on cinder fill
  - Expansion joints in roof surfaces
- CONCRETE FLOOR HARDENING
- SIDEWALKS
  - Sidewalk lights
  - Waterproofing of structural walk slabs
  - Sidewalk concrete fill and topping
  - Reinforcing for walk slabs
  - Curbs and gutters
  - Caulking of walk joints
  - Cutting and patching
- PROGRESS PHOTOGRAPHS
- GUARANTEES

Department of Specifications

(*Concluded from page* 31)

must be caulked. This caulking is usually accomplished by means of oakum driven into the joints, the joints then being filled with an elastic cement that will not run during hot weather or crack during cold weather.

Where steel pan stair construction is provided, to be finished with cement treads and floor landings, the specifications for the concrete fill and finished topping should be the same as specified herein for general floors, except, of course, that the thickness will be less. The coarse aggregate will be smaller, and more care will be exercised in the placing of the finished topping.

INDUSTRIAL NOTES

Terra Cotta in Other Days

MR. FREDERICK C. HIRONS, of the firm of Dennison & Hirons, architects, on a trip to Italy in 1921, collected some interesting photographs of early examples of terra cotta work. He also made and procured measured drawings of interesting profiles of much of that work.

The Atlantic Terra Cotta Company has revived the monthly journal *Atlantic Terra Cotta,* suspended during the war, and in each issue of this publication an example will be presented of the use of terra cotta in early Italian Renaissance structures. Some of the work will be of well known buildings and there are to be many little known examples secured in places remote from the beaten path and never before published. Mr. Hirons, we learn, will actively co-operate in the work of preparing these special issues.

The May issue describes the Ospedale Maggiore, Milan. This building was started in 1456 and was not completed until 1626. There is one page of text, six full page halftones of various details and two pages of measured profiles, contributed by Mr. Hirons.

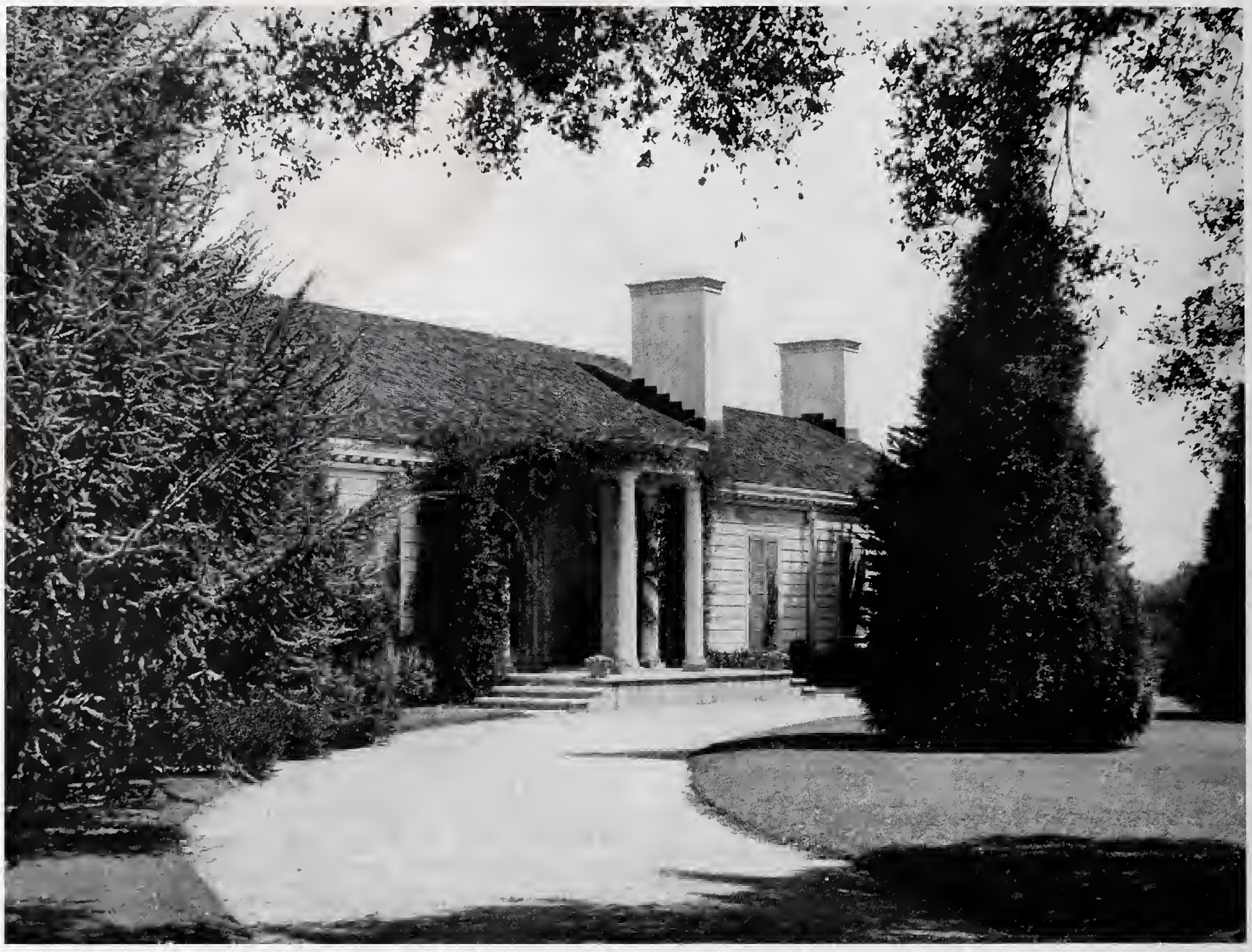
The June issue contains Part 1 of an article on the Certosa of Pavia, started in 1396 and completed in 1491. This is also the work of Mr. Hirons and consists of one page of text, six full page halftones and two pages of measured profiles, contributed by Mr. Hirons.

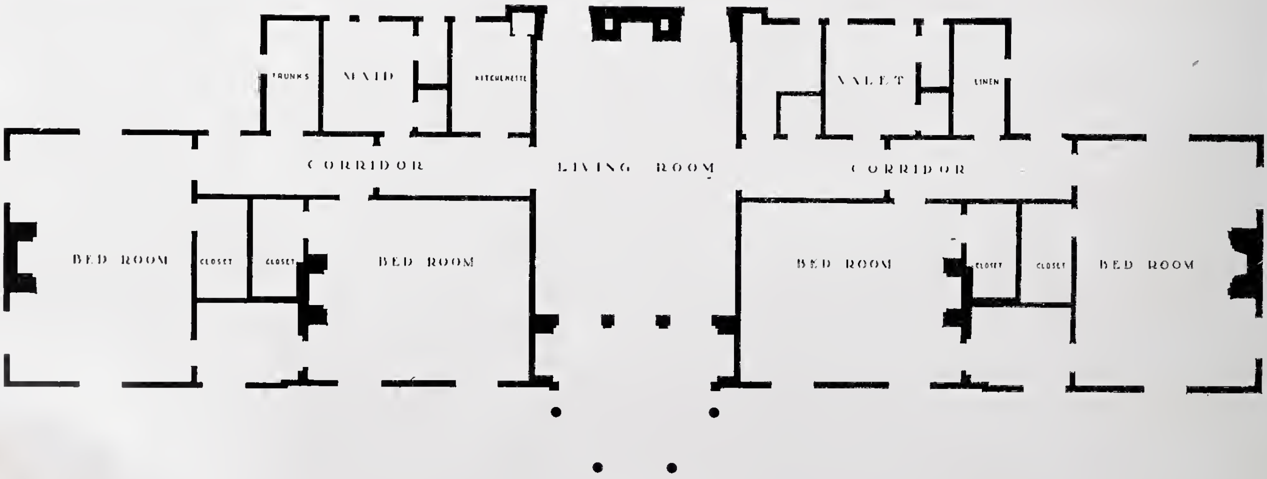
These brochures are printed on good quality paper on 8½ x 11 in. pages. The company announces that there will be twelve issues in the series and that the edition is limited. Copies will be sent free by the Atlantic Terra Cotta Company, 350 Madison Avenue, New York City, to any architect, designer or draftsman making request for same on his business stationery.

Copper and Zinc Shingles

THE Glidden Company has just closed a contract with the Anaconda Copper Mining Company through one of its subsidiaries, whereby the Glidden Company and its affiliated companies will have the selling rights on Anaconda copper and zinc roofings throughout the United States.

The Glidden Company has also arranged through the Anaconda Lead Products Company for the exclusive manufacturing rights to Anaconda Lead in Oil, a new product made by the electrolytic process.





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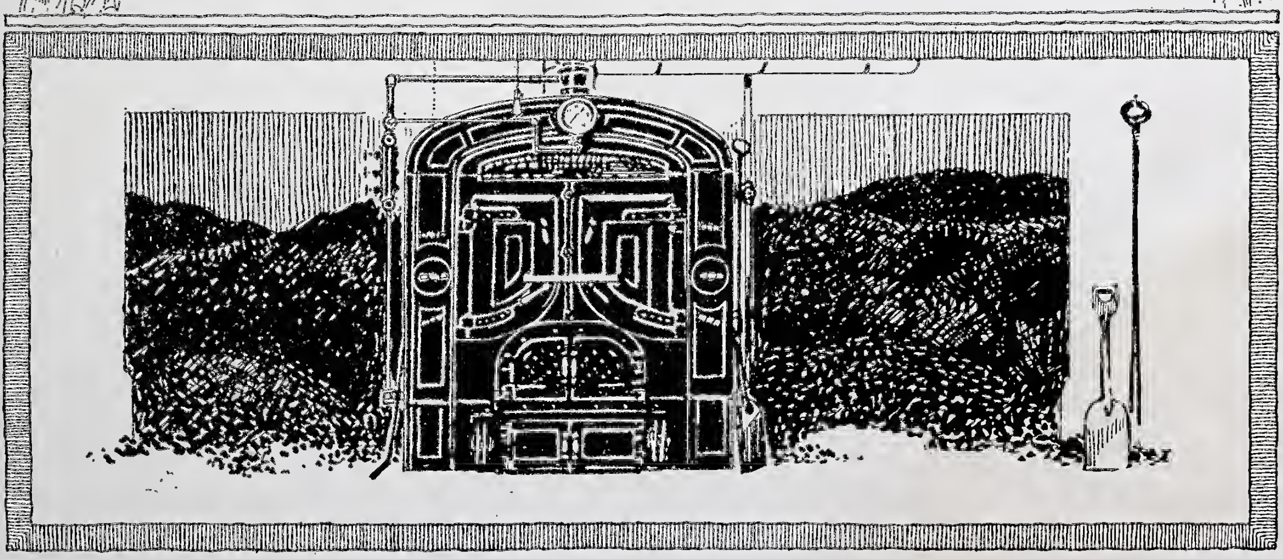

Alabama Polytechnic Seeks an Assistant Professor of Architectural Design

THE Alabama Polytechnic Institute, Auburn, Alabama, announces a vacancy in the Department of Architecture, and is desirous of receiving applications for a position in the faculty as assistant professor of architectural design.

Applicants must be graduates in architecture from one of the member colleges of the "Association of Collegiate Schools of Architecture," preferably with post-graduate training in design,—either that or satisfactory substitute training similar to that of the Ecole des Beaux-Arts.

Further information may be had by addressing the Department of Architecture at the Institute.

Year Book of Dallas Architectural Club

THE Year Book and Catalogue of the first annual exhibition of the Dallas Architectural Club has been received. It is a most dignified presentation by a very wide awake organization, of the architectural development in the fast growing Southwest. In fact, the work that is being accomplished by the members of the Dallas Architectural Club indicates a very serious purpose in architecture and is resulting in an artistic development in Dallas and its vicinity that should assure the people as to the safety of their architectural future. It is to organizations throughout the country such as this one that we shall look for our best architectural development. Their work is marked by seriousness, saneness, and the finest civic ideals.

Tenth International Congress of Architects to be Held at Brussels, September 4-11, 1922

THE Tenth International Congress of Architects will be held under the auspices of the "Societe Centrale" d'Architecture de Belgique" in Brussels, September 4-11, 1922.

An International and a National Retrospective Architectural Exhibition will be held at the same time.

There was never a more auspicious moment than the present for holding an International Congress. The War interrupted the preparations of the Tenth Congress which was to have been held in Petrograd in May, 1915. During and even since the War the architects of various countries have been isolated from each other. It is further thought to be an especially good time for renewing these gatherings when the Societe Centrale will be celebrating the fiftieth anniversary of its foundation.

The Belgians believe, too, that as their country was the center of the theatre of War that their foreign confreres will be glad to note their reconstructions and the vitality of their countrymen.

The Congress which will include delegates from all friendly countries will be held under the presidency of M. Girault, Member of the Institute of France. The Belgian Committee under the Chairmanship of M. J. Caluwaers with M. R. Moenaert as Secretary, is assured of the co-operation of Spain, Holland, Canada, Portugal, England, Italy, the United States, and Switzerland.

Official Delegates may address the meetings in their own language.

The official language of the Congress will be French, though any other language may be used provided a "resume" in French is submitted at the same time.

All American architects are cordially invited to attend and take part. The subjects to be discussed are of international interest; the excursions will be instructive and the receptions of unusual interest.

There is a permanent Committee of the Congress that attends to all the business of the organization between sessions. It also selects the country in which the next Congress is to be held and selects the subjects for discussion. There are about one hundred members from various countries. The American Section consists of: Francis R. Allen, Glenn Brown, W. R. Mead, Cass Gilbert and George Oakley Totten, Jr., Secretary.

All desiring to attend should communicate with the Secretary, 808-17th St., N. W., Washington, D. C.

Ecole des Beaux-Arts Receives Gift

FROM press announcements it is learned that Gaston Redon, a French architect and member of the Institute, recently deceased, has left half his fortune to be divided between the Académie and the Ecole des Beaux-Arts. The Ecole will use the revenues from its share of the bequest to found ten annual prizes for its students of architecture, and the Académie will establish a single prize for the grand prix architect of Rome returning from the Villa Medici in order to facilitate his establishing himself in Paris.

City Springs Up in Winter, But Fades Out in Spring

ON the Gulf of Aden, press reports announce, is a spot of barren sand where a city springs up every Winter and almost disappears in the Summer. This place is called Berbera. A market is held there every Winter and during the height of trading it becomes a city of rude huts and tents with a population of over 20,000. During the Summer the place is deserted.

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A Perfect House

UNDER the above heading the Special Correspondent of the *"Daily Telegraph"* gives a long and glowing description of a house designed by Mrs. Clarice Davidson for her husband, comments *The Architect.* The points of the house are as follows:—

1. It is only one room deep so that every room can be sun-lighted during the whole of the day.
2. The drawing room has a gas-fire in two halves, which swing round into hollows on each side disclosing an ordinary coal fire.
3. From the drawing room you step out into the garage complete with fire extinguishers and cupboards; it has the *exceptional advantage* of a concrete floor!
4. On one side of the hall is a large dining room with a table near the window and another table near a patent fireplace, and across the dining room are two sliding doors leading to the kitchen.
5. In this holy of holies the triumph of the house and cupboards with doors that slide easily, drawers which never stick, and tables which fold up against the wall, more than this there is a stove with a hood over to carry off the fumes of gas and smoke.
6. This gas stove heats water for every room in the house, in which every bedroom has fixed basins.
7. When the tradesmen call you need not open the back door, you merely open a hatchway near the front gates.
8. The cupboards are wonderful, and many of them are lighted by electricity, while the front door bell is so arranged that inmates in the orchard at the back of the house receive notification of callers.
9. Every room has rounded corners and electric switches for working the vacuum cleaner or electric iron.

We suppose that Dr. Davidson paid the bill, but we are not informed what it amounted to; this would interest us almost more, together with a ground plan, than some of the "points" given above, which can be obtained by any of us who care to pay for them. We suggest that the Special Correspondent should now visit Dr. Davidson and discuss the question of cost with him: it should be noted that each room must have two outside walls.

BOOK NOTES

Practical Plumbing*

FEW specification writers pause to consider the responsibility they place on plumbing and heating contractors. The latter are seldom men of much education and their training is almost wholly along practical lines. That their work is so often well done usually is due to aid received from salesmen of supply houses. It is not a nice situation in which the specification writer who should know, leaves important details to be settled by a man who lacks scientific training who must in his turn be helped by a man whose interest lies in selling materials to be used on the job.

There are treatises on plumbing and heating but few men read or study them who would be most benefited by such reading or study. What has been needed is a book giving to the plumber the scientific data he needs and to the specification writer the practical data he needs so that both may be independent of the salesman. Mr. Dibble seems to have met the situation nicely in his new book which aims to present information designed to perfect installations. It is so indexed and arranged with cross references that all sections are focused on the plumbing and heating industry.

There are 16 chapters, as follows: Heat; Pumps; Oxyacetylene Welding; General Plumbing; Fittings; Pipe Standards and Pipe Dies; Vitrified Clay Sewer Pipe; Gas Fitting; Plumbing Fixtures; Metallurgy and Chemistry; Sheet Metal Work; Heating; Mathematics; Codes; Glossary of Plumbing Terms; Business Methods; Appendix containing a model plumbing code. The author is a member of the American Society of Heating and Ventilating Engineers, and heads the Heating, Ventilating and Sanitation Department, Carnegie Institute of Technology. He was at one time Secretary, Connecticut Master Plumbers' Association. Eight professors and consulting engineers, each a specialist in some phase of the work, collaborated with Mr. Dibble in writing the book.

It will certainly be of value to those plumbers who read and study but it will be of greatest value to architects and their assistants. Every Clerk of Works and inspector should have a copy.

---

* *Plumbers' Handbook. .By Samuel Edward Dibble. New York, McGraw-Hill Book Co., Inc. 629 pp. Ill. 4x7 in. Fabrikoid.* $4.00.

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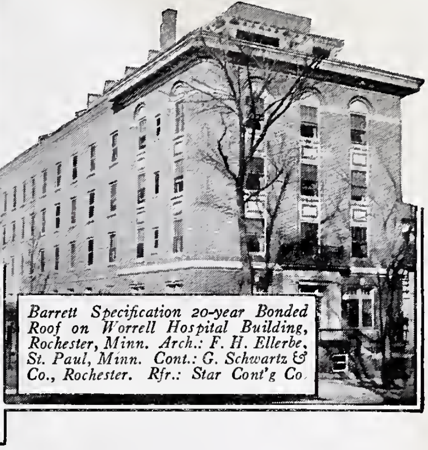

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Barrett Specification 20-year Bonded Roof on Rochester Telephone Company's Building, Rochester, Minn. Arch.: Downs & Eads, Minneapolis, Minn. Cont.: G. Schwartz & Co., Rfr.: Star Cont'g Co., Rochester.

Barrett Specification 20-year Bonded Roof on Holmes School Building, Rochester, Minn. Arch.: F. H. Ellerbe, St. Paul, Minn Cont.: Maske & Matzke, Rochester, Minn. Rfr.: J. W. Gibson Co., Rochester.

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PERSONALS

Wilder & White, architects, announce the removal of their offices from 50 Church Street to 16 East Forty-first Street, New York City.

G. Albert Lansburgh, architect, announces the removal of his offices to 140 Montgomery Street, San Francisco, Cal.

N. S. Spencer & Son, architects, announce the removal of their office from the Old Colony Building to 1830 Calumet Avenue, Chicago, Ill.

Thomas M. James Company, architects, announce the removal of their offices to Room 2117, 342 Madison Avenue, New York City.

It is announced that John Oakman, architect, has opened offices at 129 Lexington Avenue, New York City.

Announcement is made that Joseph Stastny, Jr., architectural engineer, has moved his office from 5864 Phillips Avenue, Pittsburgh, Pa., to 1030 South Avenue, Wilkinsburg, Pa.

John Warren Teasdale, architect, wishes to announce the removal of his office to the Times Building, St. Louis, Mo. Manufacturers are requested to send samples and catalogs.

It is announced that Tourison and Betts, architects, have moved their office from 1212 Land Title Building to 22 South Eighteenth Street, Philadelphia, Pa.

Wolfe Marcovitch, architect, has moved his office from 739 Almond Street, Syracuse, N. Y., to the Everson Building, 116 South Salina Street, that city.

Shampan & Shampan, architects, announce the opening of new offices at 188 Montague Street, Brooklyn, N. Y. This firm was formerly at 50 Court Street, Brooklyn.

It is announced that William Francis Leppin, architect, will return to New York from Tokyo, Japan, some time this month, after completing his work in connection with the modern office building and banks in the Orient being built by the George A. Fuller Co. of the Orient, Ltd.

It is announced that Edwin P. Bacon and William C. Lurkey, architects, are now associated for the practice of architecture under the firm name of Bacon & Lurkey, with offices at 708 Erie County Bank Building, Buffalo, N. Y. Manufacturers are requested to send catalogs and samples.

F. S. Cowles, architect, formerly at 320 N. Madison Avenue, Pasadena, Cal., is now located at 1489 Scott Avenue, Los Angeles, Cal.

Frederick Hodges, architect, has moved his offices from 262 Lennox Building to 426 Hickox Building, Cleveland, Ohio.

Miller, Fullenwider & Dowling, architects, announce the removal of their offices from 6 N. Michigan Avenue to 640 N. Michigan Avenue, Chicago, Ill.

Geo. M. Kauffman, architect, formerly located at 174 Lennox Building, Cleveland, Ohio, is now occupying offices at 5511 Euclid Avenue, that city.

Louis H. Friedland, architect, formerly at 512 Fifth Avenue, will continue the practice of architecture at 56 West Forty-sixth Street, New York City.

Delbert K. Perry, A. I. A., announces the removal of his architectural offices into his recently completed building at 17 Court Street, New Britain, Conn., where he will be pleased to receive manufacturers' catalogs and samples.

R. J. Hamilton, architect, opened an office for the practice of architecture in Room 1 of the Nelson Building, Hutchinson, Kansas, on June 1 last. Manufacturers' catalogs and samples are requested.

Announcement is made that Harry B. Aarens, architect, after a brief vacation, has again taken offices at 127 N. Dearborn Street, Chicago, Ill., where he would be glad to receive manufacturers' samples and literature.

L. B. Husband and J. A. Robertson, architects, have opened an office for the practice of architecture in Room 30, Merchants Bank Building, Hamilton, Ont. Manufacturers' samples and catalogs are desired.

Benton S. Russell, architect, announces the opening of his office for the practice of architecture, at 1948 Grand Central Terminal, New York City. Mr. Russell was formerly located at 239 Astoria Avenue, Astoria, L. I., N. Y.

Gurda & Gurda, architects, formerly located at 470 Mitchell Street, Milwaukee, Wis., announce the removal of their offices to the Central State Bank Building, Mitchell Street at Second Avenue, that city.

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Tabulation of Building Costs

Eleventh of THE AMERICAN ARCHITECT'S series of cost tables, figures for which were furnished by Architects throughout the United States. The first compilation appeared in January 12, 1921, issue.

Type of Building	Location	Type of Construction	Equipment	Foundations	Total Cubic Feet	Lowest Bid or Contract Price	Cubic Foot Cost	Date Bids Received
Residence	Altadena, Calif.	Stucco, metal lath on wood frame; oak floors in best rooms.	Gas heat; electric light; three bath rooms.	Concrete	46,000	$16,600		Aug. 1921
Residence	La Jolla, Calif.	Reinf. conc. frame; tile filling; wood floors.	Gas heat; electric light; three bath rooms.	Concrete	36,162	24,115		Mch. 1922
Residence	Rock Island, Ill.	Non-fireproof; brick walls; wood floors.	Hot water heat; electric light; high grade plumbing.	Concrete & Brick	88,960	40,000	.45	Apr. 1922
Factory	Los Angeles, Calif.	Fireproof; reinf. conc.; 3fls. & basement; steel sash.	Hot water heat; electric light; 6 toilets, 6 lav., 1 urinal, 2 showers; 1 elec. elev.	Concrete	307,844	58,450		Sept. 1921
Stores & Offices	Rock Island, Ill.	Ord. const.; brick walls; wood interior.	Vapor heat, electric and gas; med. plumbing.	Brick	....	44,000	.195	Apr. 1922
Apartment House	San Francisco, Calif.	Semi-fireproof; brick walls; double wood floors; 3 stories.	Steam heat; electric light; best plumbing, tiled in.	Concrete	195,264	85,000	.435	Apr. 1922
Public Bath House & Comfort Station	Hartford, Conn.	Walls common brick with limestone trim; floors conc. on steel beams on bearing walls.	High press, steam heat from central plant; electric light; high-grade plumbing.	Plain conc. footings and walls	75,765	40,500	.535	Apr. 1922
Garage and Servants' Quarters	Pasadena, Calif.	Semi-fireproof; hollow tile walls; 1st floor concrete; other floors wood.	Gas, furnace; elec. light; modern plumbing with cesspool.	Concrete	47,000	27,242	.58	June 1921
Residence	Pasadena, Calif.	Semi-fireproof; tile walls; wood floors.	Gas furnace; elec. light; mod. plumbing to sewer.	Concrete	140,000	90,000	.643	Aug. 1921
Residence	Santa Barbara, Calif.	Non-fireproof; walls stucco on frame; wood floors.	Steam heat; elec. light; plumbing with cesspool.	Concrete	135,000	56,000	.415	Feb. 1922
Home for Aged People	Alhambra, Calif.	Non-fireproof; walls stucco on frame; wood floors.	Gas furnace; elec. light; plumbing with cesspool.	Concrete	165,000	31,000	.189	1922
Residence	Stamford. Conn.	Non-fireproof; frame; 1st floor oak; 2nd floor pine.	Hot water heat; elec. light; 2 baths and one lavatory.	Field stone	53,000	21,650	.41	Apr. 1922
School	Waterbury, Conn.	Non-fireproof; brick walls; wood floors	Has heat, light and plumbing.	Rough stone	295,500	141,114	.48	Mch. 1922
School	Waterbury, Conn.	Semi-fireproof; brick walls; reinforced concrete.	Has heat, light and plumbing.	Stone	190,000	93,639	.493	May 1922

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REFERENCE LIST OF BUSINESS LITERATURE

A service arranged for the use of the Architect, Specification Writer, and Architectural Engineer.

This list of the more important business literature of Manufacturers of building material and equipment is published each issue. Any of these publications may be had without charge, unless otherwise noted, by applying to The American Architect and The Architectural Review, 243 West 39th Street, New York, or obtained directly from the manufacturers. Either the titles or the numbers may be used in ordering.

AIR CONDITIONING—See also Heating and Ventilation.

The Bayley Manufacturing Company, 732-760 Greenbush St., Milwaukee, Wis.

486. *Bulletin No.* 23. This bulletin is descriptive of the Bayley Turbo-Atomizer, the Bayley Turbo Air-Washer and Air Conditioner, for cleaning, cooling, tempering, humidifying and dehumidifying air. It contains an interesting treatise on air conditioning methods together with useful tables and a set of specifications. 32 pp. Ill. 7¾ x 10½ in.

ARCHITECTURAL IRON WORK—See also Ornamental Metal Work

The Builders Metal Products Co., Cleveland, Ohio.

414. *Hall Patent Steel Stairs.* Detail drawings, specifications for and description of a strongly built, rigid steel stairway. 3 pp. Ill. 7¾ x 9 in.

The Hughes-Keenan Company, Mansfield, Ohio.

230. *Catalog No.* 5. Contains descriptions of pressed Steel Stairs, Ornamental Iron, Fire Escapes, Steel Door and Window Frames, Pressed Steel Toilet Partitions. 65 pp.

ASBESTOS—See also Lumber, -Roofing

Johns-Manville Co., New York, N. Y.

372. *Catalog No.* 304. A treatise on the manufacture and uses of Johns-Manville Building Materials made of asbestos and mastic for all places exposed to fire or corrosion. 100 pp. Ill. in colors. Board covers. 8½ x 11 in.

ASBESTOS ROOFING—See also Roofing

The Philip Carey Co., Lockland, Cincinnati, Ohio.

380. *Asbestos versus Fire.* Booklet in colors. Contains information about asbestos; data on Carey Prepared and Built-up Asbestos Roofing; pictures of buildings on which they have been used. 15 pp. Ill. 6 x 9 in.

ASH HOISTS—See also Hoists

Gillis & Geoghegan, 545 West Broadway, New York, N. Y.

329. *General Catalogue.* Contains specifications in two forms, (1) using manufacturer's name, and (2) without using manufacturer's name. Detail in ¼ in. scale for each telescopic model and special material handling section. Fully illustrated with photographs of actual installations and descriptive matter of same. 20 pp., 2 colors, 8½ in. x 11 in.

ASH RECEIVERS

Sharp Rotary Ash Receiver Corporation, 396 Bridge St., Springfield, Mass.

205. *Catalogue E.* Booklet describing the Sharp Rotary Ash receiver with illustrations of houses in which the furnaces are equipped with this device. 24 pp. Ill. 6 x 9¼ in.

331. *Catalogue F.* A Booklet for architects and builders telling what the Sharp Rotary Ash Receiver is and what it does; together with tables of dimensions for installation. 8 pp. Ill. 6 x 9¼ in.

BOILERS

General Boilers Company, Waukegan, Ill.

444. *Catalog No.* 7. A catalog completely describing the construction and operation of Pacific Steel Boilers. Contains also specifications and price lists. 32 pp. Ill. 6 x 9 in.

BRICK

American Face Brick Association, 110 South Dearborn St., Chicago, Ill.

103. *The Story of Brick.* Contains the history of, and basic requirements of building brick, artistic, sanitary and economic reasons, comparative costs, and fire safety with photographs and drawings, and illustrates ancient and modern architectural works of note in brick. Size 7 x 9¼ in. 56 pp.

137. *A Manual of Face Brick Construction.* The history of brick making, types of face brick, showing details of construction for walls, chimneys and arches. Details of use of tile and brick Construction and different types of bonds are given. A series of plans and elevations of small brick houses, descriptions, useful tables and suggestions are illustrated and described. Size 8½ x 11 in. 116 pp. Price $1.00.

155. *The Home of Beauty.* A booklet containing fifty prize designs for small brick houses submitted in national competition by architects. Texts by Aymar Embury II, Architect. Size 8 x 10 in. 72 pp. Price 50 cents.

371. *Architectural Details in Brickwork. Series One, Two and Three.* Each series consists of an indexed folder case to fit standard vertical letter file, containing between 30 and 40 half-tones in brown ink on fine quality paper. These collections are inspiring aids to all designers. Sent free to architects who apply on their office stationery; to others, 50 cents for each series.

American Face Brick Association, 110 South Dearborn St., Chicago, Ill.

454. *Bungalow and Small House Plans.* Four booklets containing plans for attractive small brick houses, containing 3-4, 5, 6, and 7-8 rooms. 50 pp. Ill. 8½ x 11 in. 25 cents each, $1.00 for the set.

The Common Brick Manufacturers' Association of America, Cleveland, Ohio.

F461. *Brick, How to Build and Estimate.* The third edition. revised and enlarged, of the famous treatise by Wm. Carver, architect. A presentation of facts for laymen and a manual of construction data for architects, engineers and builders. Price 25 cents. 72 pp. Ill. 8½ x 11 in.

BUILDING CONSTRUCTION—See also Garage Construction

Concrete Engineering Co., Omaha, Neb.

347. *Handbook of Fireproof Construction.* An illustrated treatise on the design and construction of reinforced concrete floors with, and without suspended ceilings. The Meyer Steelform Construction is emphasized and tables are given of safe loads for ribbed concrete floors. 40 pp. Ill. 8½ x 11 in.

McKeown Bros. Co., 21 East 40th St., New York, N. Y.

434. *Clear Floor Space.* A folder showing uses and advantages of McKeown "Lattis" and "Bowstring" long span wood roof trusses. 4 pp. Ill. 8½ x 11 in.

Truscon Steel Company, Youngstown, Ohio.

317. *Truscon Floortyle Construction. Form D-*352. Contains complete data and illustrations of Floretyle installations. 16 pp. Ill. 8½ x 11 in.

318. *Truscon Standard Buildings. Form D-*398. Describes Truscon Standard Steel Buildings, with diagrams, illustrations of installations, descriptive matter and list of users. 48 pp. Ill. 8½ x 11 in.

319. *Truscon Building Products. Form D-*376. Contains a brief description of each of the Truscon Products. 112 pp. Ill. 8½ x 11 in.

320. *Modern School Construction. Form D-*396. Contains illustrations of schools, with typical elevations, showing advantages of Truscon Products for this construction. 16 pp. Ill. 8½ x 11 in.

BUILDING HARDWARE—See Hardware

BULLETIN BOARDS

R. W. Clark Mfg. Co., 1774 Wilson Ave., Chicago, Ill.

443. *Own Your Directory* and *Bulletin Boards of Character and Service.* Two pamphlets describing the Clark Changeable Bulletin Boards and Directories for Hotels, Club Houses, Business Blocks, etc. Each 4 pp. Ill. 6¼ x 9½ in.

CABINETS

Hess Warming & Ventilating Co., 1204-7 Tacoma Building, Chicago, Ill.

386. *The Hess Sanitary Medicine Cabinet Lockers and Mirrors.* Description with details of an enamelled steel medicine cabinet for bathrooms. 20 pp. Ill. 4 x 6 in.

CASEMENTS—See Doors and Windows

CEILINGS, METAL

The Edwards Manufacturing Company, Cincinnati, O.

193. *Pamphlet* of 32 pages describing metal ceilings and wainscoting. Well illustrated, with list prices and rules for estimating. 7 x 10 in.

CEMENT

Carney Cement Company, Mankato, Minn.

448. *The Bond That Guarantees the Wall.* Attractive catalog for architects, engineers, contractors and dealers. Describes fully the characteristics, durability and economy of this nature-mixed cement that requires no lime. Contains simple formula for mixing and illustrations of Carney-laid buildings. 20 pp. Ill. 8½ x 11 in.

Krider Building Material Co., Inc., 422 East 3rd St., New York, N. Y.

418. *Durastone Brand Cement.* A description of a cement which matches any stone or marble, any color or texture. Can be cast in molds and also used for walls or plain surfaces. Illustrations are given of beautiful work executed with this material. 12 pp. 8½ x 11 in.

Universal Portland Cement Company, Chicago, Ill.

F488. *Concrete Schoolhouses.* A collection of views of handsome school houses of concrete in many cities. 24 pp. Ill. 8½ x 11 in.

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REFERENCE LIST OF BUSINESS LITERATURE—Continued

CHUTES—See also Laundry Equipment

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.
171. Booklet showing general construction and size of chutes to receive coal. Two types are built into the foundation wall with glass panel in place of cellar window; another type is placed flush with the ground, and is placed adjacent to wall, or can be placed near the street curb. Size 3½ x 6¼ in. 16 pp.

CLOCKS

Landis Engineering and Manufacturing Co., Waynesboro, Penna.
469. *Frick Electric Time and Program System.* A collection of bulletins No. 100, 110, 120, 130, 150 and 160, dealing with master and secondary clocks, equipment, time stamps, etc. Bound in expansible filing cover of tough paper. 48 pp. Ill. 8½ x 11 in.

COLUMNS

Lally Column Co., of New York, Calyer & Russell Sts., Brooklyn, N. Y.
122. *Lally Columns. Handbook.* Detailed construction diagrams for various types of steel construction. The text describes advantages of endurance and economy of the column. Various tests, tables of sizes, dimensions, weight, capacities and price given. Size 4¾ x 6½ in. 64 pp.

CONDUITS—See Pipe

DAMPPROOFING—See also Waterproofing

DECORATIVE FABRICS

Flambeau Shops, Inc., 7 East 39th St., New York, N. Y.
420. *Hand Woven Fabrics.* A four-page circular with an artistically designed cover describing the work of the Flambeau Shops, Inc. Here are woven in any combination of colors, or to any special design, fabrics to suit the decorative scheme of a client. This includes draperies, wall hangings, bed coverings, rugs, etc., all executed on hand looms.

DOORS AND WINDOWS

Art Metal Construction Company, Jamestown, N. Y.
413. *The Interior System of Architectural Hollow Metal.* A loose leaf binder containing 38 sheets of details and 12 pages of description and specification of hollow metal doors, sash and trim.

Crittall Casement Window Company, 2703 E. Atwater Street, Detroit, Mich.
247. *Catalog No.* 18. *Crittall Universal Casements.* Contains complete description of steel casement windows for banks, schools, residences, churches, hospitals, etc., with details showing construction when set direct in masonry or with auxiliary frames. Sample specification enclosed 56 pp. Ill. 9 x 12 in.

Dahlstrom Metallic Door Co., Buffalo and East 2nd St., Jamestown, N. Y.
201. *Architectural Portfolio.* A collection of various designs and types of Dahlstrom Doors, drawings and details of each style or type. Mailed free only to architectural offices. 30 pp. Ill. 14 x 18 in.

Dahlstrom Metallic Door Co., Buffalo and East 2nd St., Jamestown, N. Y.
202 *Architectural Catalogue.* An illustrated catalogue showing standard styles and types of Dahlstrom hollow metal doors and interior trim. Various types of frames and other architectural shapes are also illustrated. 46 pp. 11 sections. 10 x 14 in.

Henry Hope & Sons, 103 Park Ave., New York.
65. *Hope's Casements and Leaded Glass.* Portfolio. Gives specifications, description and photo-engraving, of Hope Casements in English and American Architecture, full size details of outward and inward opening and pivoted casements, of residential and office types. Size 12¼ x 18½ in. 32 pp.

The Kinnear Mfg. Co., Columbus, Ohio.
455. *Steel Rolling and Folding Doors and Shutters. Catalog No.* 52. This catalog is devoted to service doors adaptable to buildings of all classes, piers, factories, warehouses, etc. Illustrates their use and contains tables for designers and detailers. 96 pp. Ill. 8 x 11 in.

The Lunken Window Company, 4022 Cherry Street, Cincinnati, Ohio.
351. *Lunken Windows.* The Lunken Window allows a full 100% opening thus obtaining for a sash window all the merits, with none of the glaring demerits, of French windows. This booklet tells how this is done. 12 pp. Ill. 4 x 9½ in.
352. *Baby Book of Details for Lunken Windows.* One for heavy construction and one for light construction. Each book contains 20 pages of line drawings of details for use of draftsmen. Convenient pocket size. 3 x 5¼ in.

Monarch Metal Products Co., 5020 Penrose Street, St. Louis, Mo.
438. *Casement Windows.* An interesting talk on the beauty and practical advantages of casement windows. Describes control locks, automatic stay and casement check made by this company for use on casement windows. 12 pp. Ill. 4 x 9 in.

Morgan Woodwork Organizations, Oshkosh, Wis.
286. *Building with Assurance.* A complete treatise on standardized doors and woodwork for houses. It contains also articles by experts on Lighting, Heating, Plumbing, Interior Decorating, etc. Profusely illustrated with many plates in color. 436 pp. Flexible leatherette covers. 9 x 11 in.

S. H. Pomeroy Company, 282 East 134th St., New York N. Y.
293. *Underwriters' Laboratory Fire Retardant Windows.* A valuable book containing the Underwriters' specifications for fire retardant windows; at the same time being a complete catalog of windows built to meet the specifications. 67 pp. Ill. 6¼ x 8½ in.

Roddis Lumber & Veneer Co., Marshfield, Wis.
146. *Roddis Flush Veneered Doors.* An illustrated booklet of buildings in which Roddis doors have been used, and a treatise on Roddis Standard Construction, showing sections and diagrams of doors, as well as photographs of many types of inlaid veneered doors in color. Technical information relative to staining and finishing of doors. Size 6 x 9¼ in. 100 pp.

Truscon Steel Company, Youngstown, Ohio.
315. *Truscon Steel Sash.* A catalog containing designing data, tables and views of Stock Sash installations. 6 pp. Ill. 8½ x 11 in.
348. *Truscon Steel Sash.* This handbook has been prepared for detailers and specification writers. The descriptions are clear and the details are complete. 80 pp. Ill. 8½ x 11 in.

The J. G. Wilson Corporation, 8 West 40th St., New York City.
464. *Rolling Doors and Shutters.* A practical book on warehouse, freight house and store doors and shutters of the rolling, swing and sliding types. Contains line drawings and half-tones. 8 pp. Ill. 9 x 12 in.

DRAFTING MATERIALS

American Lead Pencil Co., 220 Fifth Ave., New York, N. Y.
268. *Booklet C-20. Venus Pencil in Mechanical Drafting.* An interesting illustrated booklet showing the possibilities of the Venus Drawing Pencil for drafting. 6 x 9 in.

Joseph Dixon Crucible Company, Pencil Department, Jersey City, N. J.
325. *Finding Your Pencil.* A book explaining the various degrees of hardness of the Eldorado pencil and the grade most suitable for every man who uses a pencil be he business or professional man, clerk or draftsman. Accompanied by a color chart of Dixon colored crayons. 16 pp. and 4 pp. in color chart. Ill. in colors. 3¼ x 6 in.

DRAINS—See also Plumbing Equipment

DRAINS—FLOOR

Crampton Farley Brass Co., 221 Main St., Kansas City, Mo.
194. Several pamphlets describing various types of floor and area-way drains. 3½ x 6¼ in.

DRYERS

Airdry Corporation, Groton, N. Y.
480. *Airdry. The Electric Towel.* This booklet describes a machine which supplants all kinds of towels in offices, hotels, stores, etc. Data are given of cost of operation compared with towels with a list of users. 10 pp. Ill. 8 x 11 in.

DUMBWAITERS—See also Elevators

Sedgwick Machine Works, 144 West 15th Street, New York.
60. *Hand Power Elevators and Dumbwaiters in Modern Architectural Construction.* Illustrated catalogue. 4¼ x 8¼ in. 80 pp.

ELECTRICAL EQUIPMENT—See also Lighting

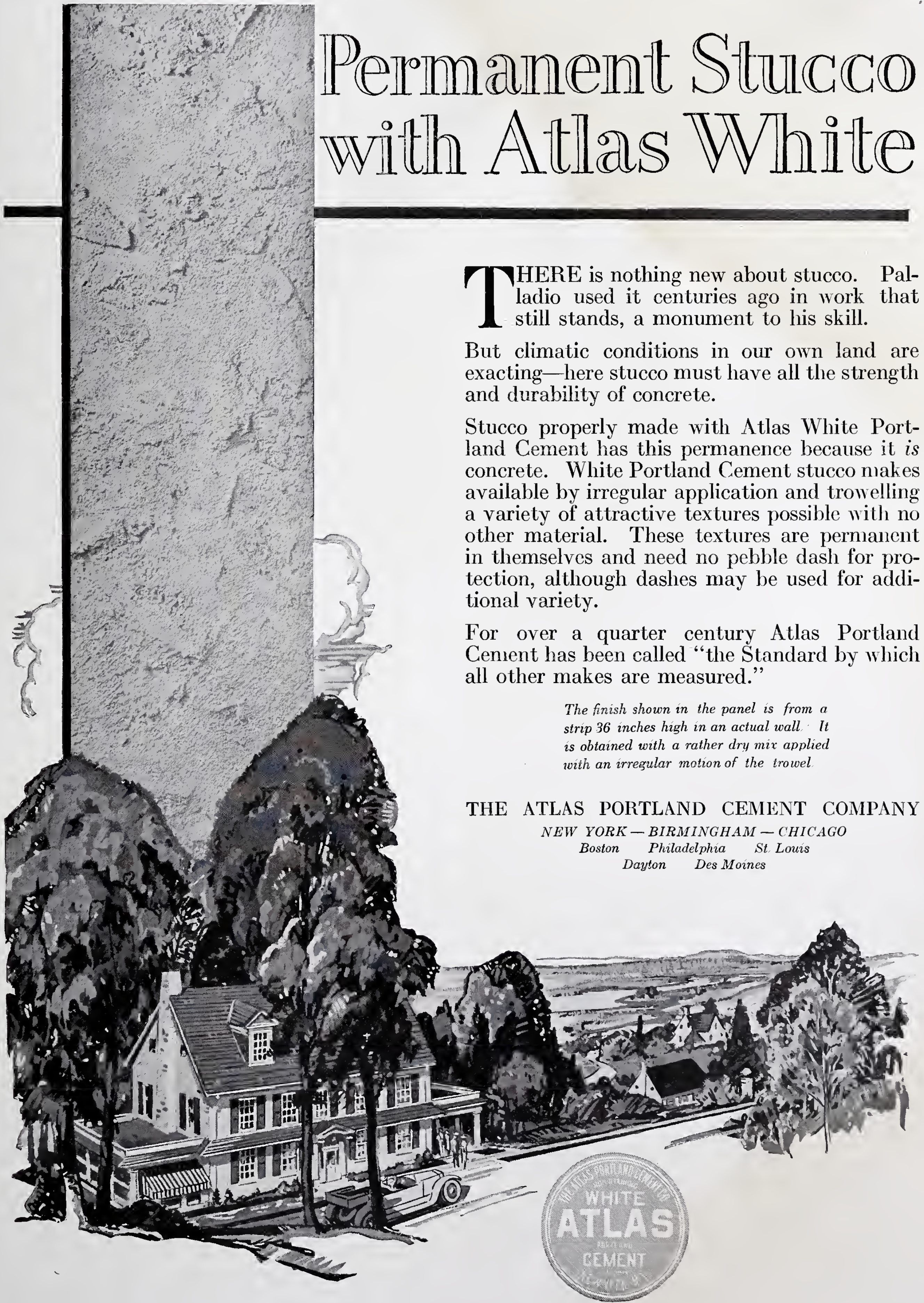
Frank Adam Electric Co., St. Louis, Mo.
296. *Catalog No.* 25. A catalog and price list of knife switches switch boards, panel boards, steel cabinets, switch board material. 83 pp. Ill. 8 x 10½ in.

Harvey Hubbell, Inc., Bridgeport, Conn.
297. *Electrical Specialties. Catalog No.* 17, 1921. This catalog contains descriptions with prices of the thousand and one items connected with electric light, electrical alarm and small electrical appliance installations in modern buildings. 104 pp. Ill. 8 x 10½ in.

National Metal Molding Co., Pittsburgh, Pa.
481. *Liberty Rubber Insulated Wires, Cables and Cords.* A descriptive catalog of insulated wires, cables and cords for electric wiring. Contains much special information together with useful tables. 20 pp. Ill. 6 x 9 in.

ELEVATORS—See also Dumbwaiters and Hoists

American Elevator & Machine Co., Louisville, Ky.
196. *Illustrated Catalogue* showing elevator equipment for various uses. 32 pp. 8½ x 9½ in.



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REFERENCE LIST OF BUSINESS LITERATURE—Continued

ELEVATORS—See also Dumbwaiters and Hoists

Elevator Locks Co., 119 No. Washington St., Peoria, Ill.

338. *A Sign of Safety.* Describes devices for mechanically locking power and automatically locking gates of elevators, and control landing. Contains also list of users of this equipment. 26 pp. Ill. 4 x 9½ in.

Kimball Brothers Company, Council Bluffs, Iowa.

330. *Kimball Elevators.* An illustrated catalog of hand power, sidewalk, and garage elevators and dumbwaiters and electric passenger, freight and push button elevators. 32 pp. Ill. 7¾ x 10½ in.

Otis Elevator Co., 260 Eleventh Ave., New York, N. Y.

261. *Electric Traction Elevators.* An illustrated catalog describing gearless traction elevators. 28 pp. 8½ x 11 in.; and an illustrated catalog describing worm gear traction elevators. 24 pp. 6 x 9 in.

Richards-Wilcox Mfg. Co., Aurora, Ill.

335. *"Ideal" Elevator Door Equipment.* Catalog showing elevator door hangers for one, two and three speed doors, also doors in pairs and combination swing and slide doors. Door closers and checks. 24 pp. Ill. 8½ x 11 in.

A. B. See Electric Elevator Co., 52 Vesey St., New York.

169. Photographs and description in detail of elevator equipment manufactured by the A. B. See Electric Elevator Co. Size 6 x 8 in.

ESCALATORS

Otis Elevator Co., 260 Eleventh Ave., New York, N. Y.

263. *Escalators.* An illustrated catalog describing escalators, with layouts of typical installations. 36 pp. 6 x 9 in.

FENCE

American Fence Construction Co., 130-132 West 34th St., New York, N. Y.

F474. *Afco Factory Fences.* A book on the construction of fences and entrances illustrated by some handsome examples. 24 pp. Ill. 8½ x 11 in.

FINANCING OF ENTERPRISES

The Hockenbury System, Incorporated, Penn-Harris Trust Building, Harrisburg, Pa.

313. *Your Hospital and Its Financing.* An educational work on how to finance a new hospital project and obtain funds for needed extensions to existing institutions. Illustrations are given of six institutions in five states financed by the methods, and through the work of the Hockenbury specialists. 20 pp. Ill. 4¼ x 8½ in.

314. *Financing Your City's New Hotel.* A plan is here offered to the enterprising architect whereby his ideas for a new hotel for his home city may be realized. Hotels financed through the work of the Hockenbury specialists are shown, together with testimonials from local business men. 20 pp. Ill. 4¼ x 8½ in.

S. W. Straus & Co., 565 Fifth Ave., New York, N. Y.

183R. *Forty Years Without Loss to Any Investor.* A book describing the Straus Plan of investments. This firm underwrites and sells only first mortgage serial bonds secured by newly improved income producing properties, or high grade industrial properties. 37 pp. Ill. 5 x 8 in.

FIRE DOORS AND SHUTTERS—See Doors and Windows

FIREPLACES AND MANTELS

Chattanooga Roofing and Foundry Co., Chattanooga, Tenn.

143. *The Magic Hearth.* Leaflets. With instructions to build an open fireplace, section drawings, illustrations of fireplace equipment grates, firebacks, cranes, andirons, etc. Size 8½ x 11 in. 10 pp.

Colonial Fireplace Company, 4611 West Roosevelt Road, Chicago, Ill.

479. *Fireplace Equipment.* A catalog and price list of andirons, modern dampers, fenders, fire-sets, screens, thresholds, etc., together with valuable information about the proper construction of fireplaces. 20 pp. Ill. 8½ x 11 in.

H. W. Covert Co., 137 East 46th St., New York.

79. *Hints on Fireplace Construction.* Diagrams of construction, and installation of Covert "Improved" and "Old Style" dampers and smoke-chambers, and other fireplace accessories. Size 5⅝ x 8½ in. 12 pp.

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.

92 *Dampers, Chutes, Doors and Dumps.* Illustrated catalog. Equipment and appurtenances of various types, construction and installation, data, dimensions and prices.

106. *Franklin Stoves.* Illustrated booklet containing plans, sections and photographs of this Colonial stove, including type heating on two floors. 12 pp. 7 x 7 in.

FIRE PROTECTION EQUIPMENT

Foamite Firefoam Company, 151 Fifth Ave., New York City.

449. *The Why of Portable Fire Extinguishers by Frank A. Epps, A.S.M.E., N.F.P.A.* A discussion of four types of portable fire extinguishers with quotations from reports made by the Underwriters' Laboratories. 6 pp. 4 x 8 in.

Foamite Firefoam Company, 151 Fifth Ave., New York City.

450. *Firefoam. What It Is and What It Does.* A description of a fire-smothering agent which blankets all burning objects; clings to all burning substances; floats on any burning liquid. 6 pp. Ill. 4 x 8 in.

Jiffy Fire Hose Rack Co., 133 West 52nd St., New York, N. Y.

266. *Stand Pipe Equipment.* An illustrated catalog showing complete installations of stand pipe equipment. 31 pp. 7 x 9 in.

FLOORING, SUB—See also Stucco Base

FLOORING

American Magnesia Products Co., 5730 Roosevelt Road, Chicago, Ill.

285. *Velvetile Floorings: Its uses and Application.* Describes Velvetile Magnesia Flooring and tells how it is applied, with information as to its durability. 12 pp. 4 x 9 in.

Armstrong Cork Co., Linoleum Department, Lancaster, Pa.

222. *Business Floors.* A handy reference on floors for public and semi-public buildings, containing specimen specifications, directions for laying and other helpful data. Illustrated in color. 6 x 9 in.

Congoleum Company, Inc., Philadelphia, Pa.

428. *The Gold Seal Specification.* Contains specifications for laying Linoleum and Cork Carpet according to methods perfected after years of experiment and careful research. 2 pp. 8½ x 11 in.

429. *Linoleum Service Sheet,* 1: *No.* 40. A sheet containing detail sketches drawn to scale for applying linoleum to floors; over thresholds; on staircases; under radiators; etc. The reverse contains description of materials and complete detailed specifications for laying linoleum. 17 x 22 in., folded to 8½ x 11 in.

The Long-Bell Lumber Co., R. A. Long Building, Kansas City, Mo.

204. *The Perfect Floor.* Tells how to lay, finish and care for Oak Flooring. 16 pp. 14 Illus. 5⅛ x 7⅝ in.

The Marbleloid Co., 461 Eighth Ave., New York.

61. *The Universal Flooring for Modern Buildings.* Illustrated booklet. Describes uses and contains specifications for Marbleloid flooring, base, wainscoting, etc. Size 6¾ x 9¾ in. 32 pp.

Franklin R. Muller Co., Waukegan, Ill.

242. *Asbestone Flooring Composition.* A book describing uses of and giving specifications and directions for Composition Flooring, Base, Wainscoting, etc. 8½ x 11 in. Ill.

W. & J. Sloane, Selling Agents, New York, N. Y.

439. *Nairn Inlaid and Printed Linoleum.* A 68-page book illustrated in colors. Shows patterns of linoleums with views of attractive interiors in which linoleum covered floors form part of the decorative scheme 6 x 9 in.

440. *Nairn Samples.* A sample book of plain linoleum and one of cork carpet, each 4¾ x 8¼ in., bound in cloth. A third sample book contains samples of inlaid and printed linoleum. 3 x 6 in.

FLOORS—See Building Construction

FURNACES—See Heating

GARAGE CONSTRUCTION—See also Building Construction

GARBAGE DESTROYERS

Kerner Incinerator Company, 1029 Chestnut St., Milwaukee, Wis.

384. *The Sanitary Elimination of Household Waste. M-3 Folder.* Description of construction, installation and operation of the Kernerator for residences. Illustrated by views of residences in which the Kernerator is installed, with cuts showing all details. 15 pp. Ill. 4 x 9 in.

GARBAGE RECEIVERS

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.

170. Booklet showing general construction and sizes of garbage receivers to be placed underground for suburban use; also types to be built into the wall of city homes and apartments; also types for suburban wall with opening on inside for the maid and outside for the garbage man. Size 3½ x 6¼ in. 16 pp.

GARDENS

Julius Roehrs Company, Rutherford, N. J.

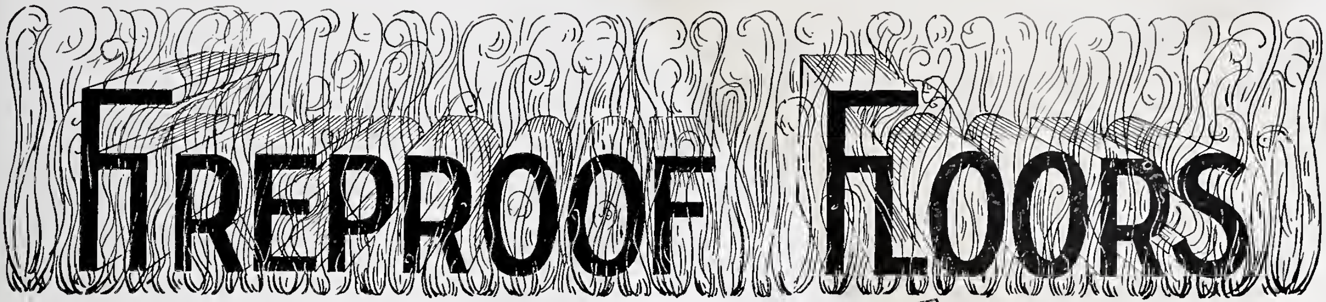
406. The Ten-Ten books issued three times a year—covering nursery stock in general, such things as fruit trees, roses and perennials. Also one general greenhouse catalog, listing orchids and greenhouse plants.

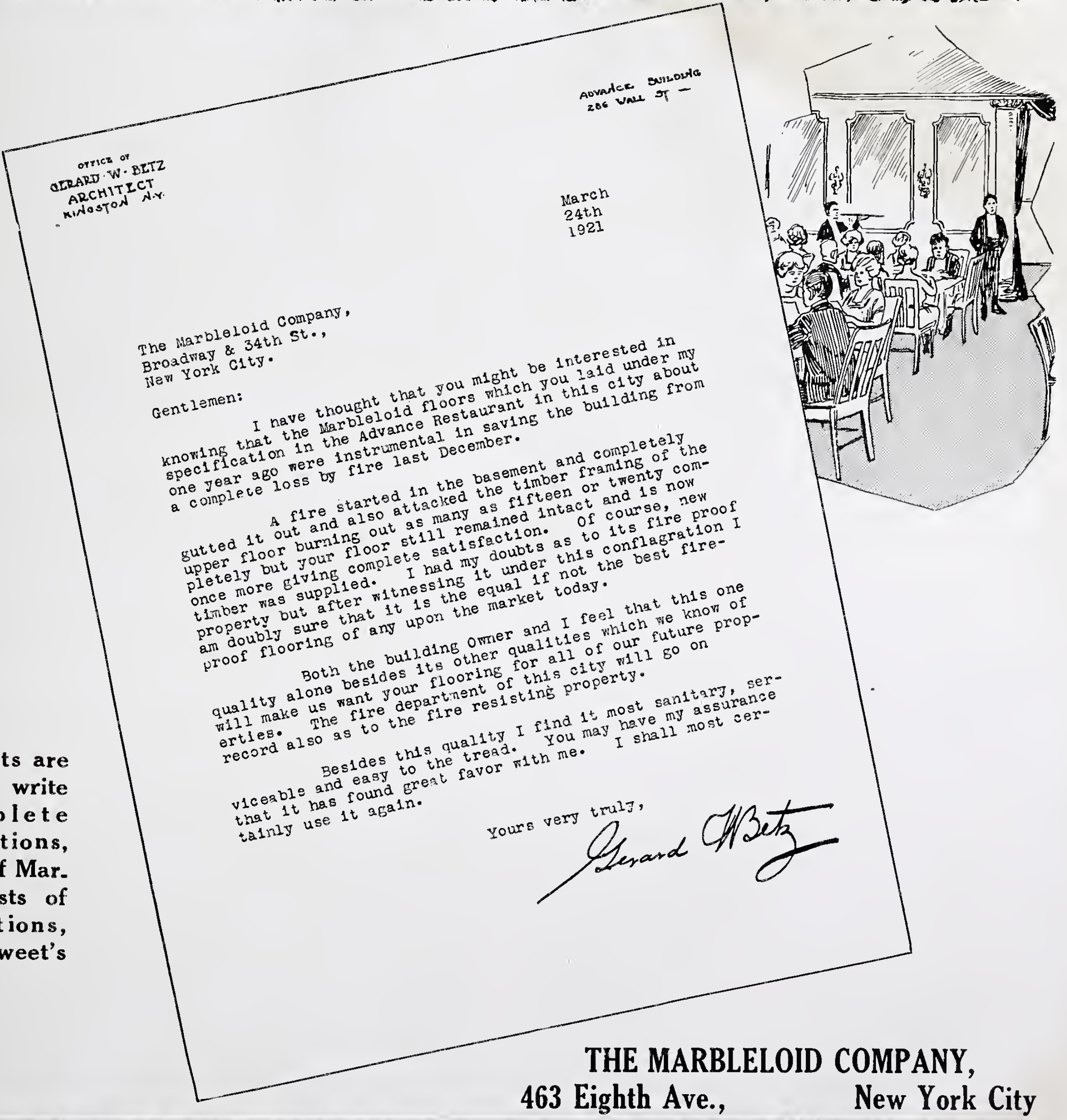
GREEN HOUSES—See Glass Constructions

GUTTERS AND DOWNSPOUTS—See also Roofing.

The New Jersey Zinc Co., 160 Front Street, New York, N. Y.

226. *Zinc Spouting.* Describes leaders, gutters, etc., "Made from Horse Head Zinc," giving information concerning their economy and durability. 8 pp. Ill. 6 x 9 in.





OFFICE OF
GERARD · W · BETZ
ARCHITECT
KINGSTON N.Y.

ADVANCE BUILDING
286 WALL ST —

March
24th
1921

The Marbleloid Company,
Broadway & 34th St.,
New York City.

Gentlemen:

I have thought that you might be interested in knowing that the Marbleloid floors which you laid under my specification in the Advance Restaurant in this city about one year ago were instrumental in saving the building from a complete loss by fire last December.

A fire started in the basement and completely gutted it out and also attacked the timber framing of the upper floor burning out as many as fifteen or twenty completely but your floor still remained intact and is now once more giving complete satisfaction. Of course, new timber was supplied. I had my doubts as to its fire proof property but after witnessing it under this conflagration I am doubly sure that it is the equal if not the best fireproof flooring of any upon the market today.

Both the building Owner and I feel that this one quality alone besides its other qualities which we know of will make us want your flooring for all of our future properties. The fire department of this city will go on record also as to the fire resisting property.

Besides this quality I find it most sanitary, serviceable and easy to the tread. You may have my assurance that it has found great favor with me. I shall most certainly use it again.

Yours very truly,
Gerard W Betz

Architects are invited to write for complete specifications, samples of Marbleloid, lists of installations, etc. See Sweet's

THE MARBLELOID COMPANY,
463 Eighth Ave., New York City

MARBLELOID

The Universal FLOORING for Modern Buildings

REFERENCE LIST OF BUSINESS LITERATURE—Continued

HARDWARE

The Bridgeport Chain Company, Bridgeport, Conn.

F483. *Sash Chain Fixtures.* A pamphlet describing all the sizes and styles of "Monarch" bronze and steel sash chain, cups, rings, hooks and fasteners with data on use. 4 pp. Ill. 6 x 9 in.

Carrier Adjuster Company, Asheville, N. C.

470. *Carrier Quadrant Adjuster.* A description, with specifications and detail line drawings, of an adjuster for outward opening casement windows. Locks window at any angle without interference with screens or draperies and permits cleaning of entire window from the inside. Permits 100% opening for ventilation. 4 pp. Ill. 8½ x 11 in.

The Kawneer Co., Niles, Mich.

142. *Kawneer, Simplex Window Fixtures.* Booklet illustrated. Drawings, photographs and text describes weightless, reversible window fixture, its ease of installation, ventilation and light control. Size 8½ x 10¾ in. 16 pp.

Knape & Vogt Manufacturing Company, Grand Rapids, Mich.

471. *Hardware Catalog No.* 10. A complete catalog of hardware for home closets, garment holders, show cases, cabinets, desks and furniture. 110 pp. Ill. 6 x 9 in.

Pullman Mfg. Co., 220 South Ave., Rochester. N. Y.

485. *Pullman Unit Sash Balances.* The Pullman Unit Sash Balance is a coiled spring in a housing that replaces weights and cords. This book tells why it costs less on nearly all installations; why it is better in all respects; and gives a list of important buildings in which this balance is in satisfactory use. Contains blue print sheet of details. 12 pp. Ill. 8 x 11 in.

Richards-Wilcox Mfg. Co., Aurora, Ill.

336. *Modern Hardware for Your Home.* Catalog of hangers for vanishing French doors; "Air-Way" multifold hardware for sun parlors and sleeping porches; "Slidetite" garage door hardware. 24 pp. Ill. 8½ x 11 in.

435. *Distinctive Garage Door Hardware. Catalog No. A*-22. This is more than a catalog. It is a treatise for architects and builders on the door equipment of garages, covering sliding, folding and combination sliding and folding doors, with their hardware. 94 pp. Ill. 8½ x 11 in.

436. *Sliding Door Hardware. Catalog No. A*-17. A catalog of sliding door hardware of Parallel, Accordion and Flush Door partitions. 32 pp. Ill. 7 x 10 in.

Sargent & Company, New Haven, Conn.

478. *Sargent Locks and Hardware,* 1922. The latest complete catalog of locks, hardware, small tools, etc. 1018 pp. Ill. 9 x 12 in.

The Stanley Works, New Britain, Conn.

11. *Wrought Hardware. New* 1921 *Catalog.* This new catalog describes additions to the Stanley line of Wrought Hardware, as well as the older well known specialties and various styles of butts, hinges, bolts, etc. 376 pp. Ill. 6½ x 9½ in.

12. *Garage Hardware.* Booklet, illustrated. Garages and their equipment, such as hinges, hasps, door holders, latch sets, chain and hand bolts, showing illustrations and text with dimensions of garages, describing the Stanley Works product. Size 6 x 9 in. 24 pp.

13. *Eight Garages and Their Stanley Hardware.* Booklet. Plans, drawings and complete hardware specifications. Size 5 x 7 in. 32 pp.

127. *The Stanley Works Ball Bearing Butts.* Booklet, illustrated. Description, with full size illustrations of many typed butts and their parts, dimensions and finish. Size 5 x 7½ in. 32 pp.

Vonnegut Hardware Co., Indianapolis, Ind.

309. *Von Duprin Self-Releasing Fire Exit Devices.* A catalog and educational work on panic-proof, burglar-proof self releasing exit devices for doors and windows of buildings of any kind of occupancy. 41 pp. Ill. 8 x 11 in.

310. *Prince Self-Releasing Fire Exit Devices. Supplement to Von Duprin Catalog No.* 12. Contains valuable information for architects on the selection, detailing, etc., of Prince devices for doors and windows to insure safety against fire panic. 32 pp. Ill. 8 x 11 in.

HEATING

Alberger Heater Company, Buffalo, N. Y.

307. *Heating and Cooling Equipment. Catalog No.* 3. A useful manual for architects in addition to serving as a catalogue of heating and cooling equipment. Explains fully the advantages of spirally corrugated heater tubing. 48 pp. Ill. with line cuts and half tones. 7¾ x 10¾ in.

American Radiator Company, 104-108 W. 42nd St., New York, N. Y.

427. *Ideal-Arcola Heating Outfits.* A book describing a system of hot water heating for small and medium size houses. The boiler is placed in a room and resembles a stove. No cellar required. The ash carrying reduced to a minimum. 24 pp. Ill. 6 x 8½ in.

Crane Company, 836 So. Michigan Ave., Chicago, Ill.

241. *Steam Catalogue.* A book containing full descriptions of the complete line of Crane valves, fittings, etc., 800 pp. Ill. 6 x 9 in.

American District Steam Co., North Tonawanda, N. Y.

421. *ADSCO.* Bulletin 158 tells in an interesting way about modern heating. 16 pp. Bulletin 159 gives valuable data for calculating radiation required in building. Tells how old systems may be remodelled to bring temperature in each room under perfect control. 16 pp. Both bulletins illustrated. 6 x 9 in.

The Farquhar Furnace Company, Wilmington, Ohio.

355. *Healthful Helpful Hints.* A discussion of furnace and chimney design and capacity for hot air heating and ventilation. 16 pp. Ill. 4¾ x 9¼ in.

356. *A Plain Presentation to Dealers.* A book of selling talk for dealers in Farquhar Furnaces. Four model heating layouts are shown and there is a page of useful "Do and Don't" advice. 24 pp. Ill. 8½ x 11 in.

Hess Warming & Ventilating Co., 1209 Tacoma Bldg., Chicago, Ill.

178. *Modern Furnace Heating.* An illustrated book on the Hess Welded Steel Furnaces, Pipe and Pipeless, notes for installation, sectional views, showing parts and operation, dimensions, register designs, pipes and fittings. Size 6 x 9½ in. 48 pp.

Jenkins Bros., 80 White St., New York, N. Y.

235. *Catalog No.* 21. This catalog contains descriptions of all the valves, packing, etc., manufactured by Jenkins Bros. Includes also dimensions and price lists of valves and parts. 271 pp. Ill. 4 x 6¾ in. Stiff paper cover.

237. *The Valve Behind a Good Heating System.* This booklet describes Jenkins Radiator Valves, Automatic Air Valves and other valves used in connection with steam and hot water heating. 16 pp. Ill. 4½ x 7¼ in. Stiff paper cover.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.

391. *The Regulation of Temperature and Humidity.* A description of the Johnson System of temperature regulation and humidity control for buildings; showing many kinds of thermostatic appliances for automatically maintaining uniform temperatures. 63 pp. Ill. 8½ x 11 in.

392. *Johnson Electric Thermostats, Valves and Controllers.* A catalog of devices mentioned in the title. 24 pp. Ill. 3½ x 6 in.

The Meyer Furnace Co., Peoria, Ill.

F495. *Catalog No.* 18. A descriptive catalog of warm air heating apparatus. Contains several pages of valuable rules and data for proportioning sizes of furnaces, mains and registers for heating houses. 38 pp. Ill. 7 x 10 in.

Richardson & Boynton Co., New York, N. Y., Chicago, Ill., Philadelphia, Pa., Providence, R. I., Boston, Mass.

290. *The Richardson Vapor-Vacuum-Pressure Heating System.* An interesting book which presents in clear non-technical language the principles of Vapor-Vacuum-Pressure heating; the economy over ordinary steam heating; steam and hot-water systems may be altered to use this principle with views of buildings where the V-V-P system is installed. 14 pp. Ill. 8 x 11 in.

291. *Perfect Warm Air Furnaces. No.* 203. Contains a full description of various types of warm air furnaces and parts, with dimensions and necessary data. 24 pp. Ill. 8 x 10½ in.

292. *Perfect Cooking Ranges.* Description and dimensions of the complete line of the new high enamel finish Richardson Perfect ranges, with charts and information regarding combination coal and gas cooking ranges. 40 pp. Ill. 8½ x 11 in.

The H. B. Smith Co., Westfield, Mass.

431. *General Boiler & Radiator Catalog.* A descriptive catalog giving ratings, dimensions, capacities and working pressures. 90 pp. Ill. 4 x 7 in.

432. *Heating Data Books.* One is an Engineers' Data Ring Book. 125 pp. Ill. 4 x 7 in. Others consist of loose leaf binders to hold special matter. 8½ x 11 in.

Sterling Engineering Company, 419 Third St., Milwaukee, Wis.

430. *Sterling Bulletins.* No. 33 describes the Sterling System of vacuum heating. 11 pp. No. 32 describes the Sterling System of vapor heating. 14 pp. No. 31 describes the Sterling slide valve return trap. 4 pp. They are all illustrated. 6 x 9 in.

Tuttle & Bailey Mfg. Co., 2 West 45th St., New York, N. Y.

395. *About Radiator Enclosures.* A book showing how easily and effectively unsightly radiators may be concealed by enclosures which adorn a room. 15 pp. Ill. 6¾ x 9¾ in.

396. *Special Designs. Catalog* 66*A.* A book of designs for grilles, screens, registers and ventilators to be used in connection with heating installations. Made of bronze, brass, iron and steel. 40 pp. Ill. 6¾ x 9¾ in.

HEATING AND VENTILATION

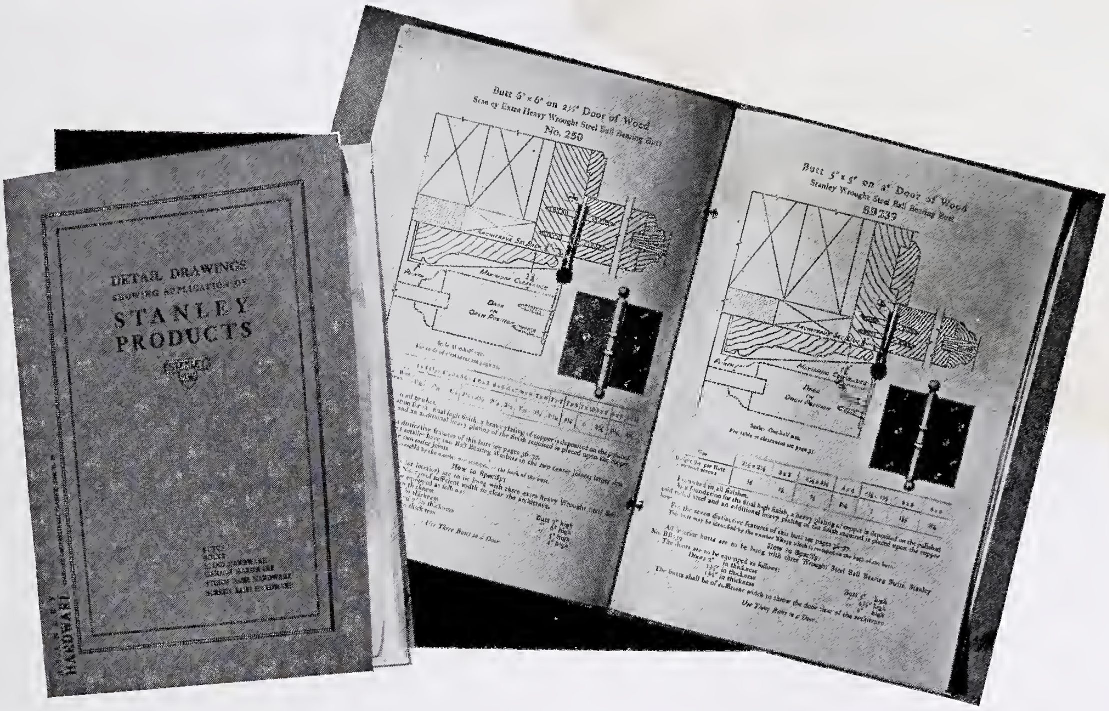
American Blower Co., Detroit, Mich.

361. *Sirocco Service.* A monthly publication containing descriptions of heating and ventilating systems installed by the American Blower Company, together with useful data for architects and engineers. 16 pp. Ill. 8½ x 11 in.

362. *General Catalog "ABC" Products.* A book full of useful data for all men who have to deal with heating and ventilating problems. 132 pp. Ill. 8½ x 11 in.

Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.

215. *Buffalo Fan System of Heating, Ventilating and Humidifying.* Catalog 700. This contains a general discussion of heating and ventilating under four heads: Part 1, Public Buildings. Part 2, Industrial Plants. Part 3, Buffalo Apparatus. Part 4, Fan Engineering.



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REFERENCE LIST OF BUSINESS LITERATURE—Continued

HEATING AND VENTILATION

The H. W. Nelson Corporation (formerly Moline Heat), Moline, Ill.

411. *Univent Ventilation. Architects' and Engineers' Edition.* A scientific treatise on ventilation for schools, offices and similar buildings; with 40 pages of engineering data on ventilation for architects and engineers. 72 pp. Also "Supplement A" on Air Conditioning. 12 pp. Ill. with half-tones, line drawings and designing charts. 8½x11 in.

Spray Engineering Company, 60 High Street, Boston, Mass.

F482. *Bulletin No. 257. Spraco Air Washing and Cooling Equipment.* A valuable treatise for architects and engineers. 16 pp. Ill. 8 x 11 in.

HEAT REGULATORS

Minneapolis Heat Regulator Co., Minneapolis, Minn.

134. *The Heart of the Heating Plant.* An illustrated catalog, describing the Minneapolis Heat Regulator, its construction, application and operation for the automatic control of temperature where coal, gas, fuel oil or street steam is used. Complete catalog and list prices. Size 6 x 9 in. 20 pp.

HOISTS—See Elevators and Ash Hoists

INCINERATORS—See Garbage Destroyers

INSULATION—See also Stucco Base

Insulite Division, Minnesota & Ontario Paper Company, International Falls, Minn.

487. *Universal Insulite in Building Construction.* Describes a clean, sanitary, odorless and vermin proof board made from selected waterproofed wood fibres, felted into light, strong, uniform sheets. Examples are given of use indoors and outdoors, together with details and useful data. 37 pp. Ill. 8½ x 11 in.

United States Mineral Wool Co., 280 Madison Ave., New York.

83. *The Uses of Mineral Wool in Architecture.* Illustrated booklet. Properties of insulation against heat, frost, sound, and as a fire-proofing, with section drawings and specifications for use. It gives rule for estimate and cost. Size 5¼ x 6⅝ in. 24 pp.

IRON AND STEEL—See also Metals

The American Rolling Mill Co., Middletown, Ohio.

233. *Armo in Picture and Fact.* A booklet describing the manufacture of pure iron in sheets and giving useful tables of sheet sizes and weights. 247 pp. Ill. 6 x 9 in.

234. *Why Steel and Iron Rust.* A booklet full of interesting data. 16 pp. Ill. 3¼ x 6¼ in.

Mitchell-Tappen Company, 15 John St., New York, N. Y.

257. *Booklet 14 on Standardized Metal Caging.* Description of various ways of reinforcing the concrete fireproofing on structural steel work, with particular reference to Standardized Metal Caging.

KITCHEN EQUIPMENT

Bramhall, Deane Co., 261-A West 36th St., New York.

59. *The Heart of the Home.* Booklet, illustrated. Deane's French Ranges (all fuels), cook's tables and plate warmers. Size 6 x 9 in. 32 pp.

The Prometheus Electric Co., 513 West 42nd St., New York.

145. *Prometheus Electric Plate Warmers.* Leaflets illustrating the plate warmer, describing its construction, utility and types, adaptable for residences and hotels, according to specifications. Sizes and dimensions. Size 5⅝ x 9 in.

LATH, METAL

American Steel & Wire Co., Chicago, Ill.

228. *Stucco Houses Reinforced With Triangle Mesh Fabric.* A pamphlet containing valuable data on stucco work with tables of quantities of materials and many illustrations of houses covered with stucco applied on Triangle Mesh Fabric. 24 pp. Ill. 6 x 9 in.

Concrete Engineering Co., Omaha, Neb.

316. *How to Use Ceco Lathing Materials.* An illustrated treatise on the use of expanded metal lath. Contains construction details and complete specifications, with sample piece of lath in pocket on cover of book. 16 pp. Ill. 8½ x 11 in.

Truscon Steel Company, Youngstown, Ohio.

316. *Hy-Rib and Metal Lath.* Tables, general data and illustrations of Hy-rib and metal lath construction. 6 pp. Ill. 8½ x 11 in.

LAUNDRY EQUIPMENT

The American Laundry Machinery Co., Advertising Dept., Cincinnati, Ohio.

84. *Catalog.* Illustrated. Washing machines, accessories, extractors, clothes tumblers, drying and ironing machines, etc., showing various types and electrical controls with specifications and dimensions for the installation and use of laundry machinery in laundries, institutions, hotels; also for mill and community laundries. Size 12½ x 9½ in. 218 pp.

LAUNDRY EQUIPMENT

Chicago Dryer Co., 2210 N. Crawford Ave., Chicago, Ill.

66. *Laundry Appliances.* Illustrated catalog. Descriptions of Laundry Dryers, Electric Washing Machines and Ironing Machines, especially adapted for use in residences, apartment buildings and small institutions. Size 8½ x 11 in. 48 pp.

The Pfaudler Co., Rochester, N. Y.

322. *Pfaudler Chutes for Economy.* Folder showing illustrations, drawings and description of the Pfaudler Laundry Chute giving dimensions for installations. Size 3⅞ x 8⅞ in. 8 pp.

LIGHTING—See also Electrical Equipment

Brascolite Company, Division of the St. Louis Brass Mfg. Company, St. Louis, Mo.

488. *Catalog No.* 9. This catalog supersedes all previous catalogs. Contains descriptions with illustrations of Brascolites, Elites and Industrolites, together with table and diagram for quickly determining wattage and sizes to illuminate a given area. 29 pp. Ill. in colors. 8 x 10½ in.

Consolidated Utilities Corporation, 730 South Michigan Ave., Chicago, Ill.

F489. *Selecting Your Light and Power Plant. Catalog E.* Contains descriptions of self-contained electric light and power plants of from fifteen to three hundred 16 c. p. lamps capacity. 16 pp. Ill. 4 x 9 in.

Cooper Hewitt Electric Co., 95 River St., Hoboken, N. J.

F480. *Industrial Lighting Briefs.* No. 1 deals with Industrial Lighting in Theory and Practice. No 3 deals with The Quickness of Response of the Hand to the Eye. Each 4 pp. 8 x 10½ in.

I. P. Frink, Inc., 24th St. and 10th Ave., New York.

150. *Light Service for Hospitals. Catalogue* 421. A booklet illustrated with photographs and drawings, showing the types of lights for use in hospitals, as operating table reflectors, linolite and multilite concentrators, ward reflectors, bed lights and microscopic reflectors, giving sizes and dimensions, explaining their particular fitness for special uses. Size 7 x 10 in. 12 pp.

218. *Picture Lighting. Booklet* 422. A pamphlet describing Frink Reflectors for lighting pictures, art galleries, decorated ceilings, cove lighting, the lighting of stained glass, etc., and containing a list of private and public galleries using Frink Reflectors. 24 pp. Ill. 5¼ x 7 in.

219. *Frirk Reflectors and Lighting Specialties for Stores. Catalog No.* 424. A catalog containing a description of the Frink Lighting System for Stores; the Synthetic System of Window Illumination; and a number of appliances to produce the most effective lighting of displayed objects. 20 pp. Ill. 8 x 11 in.

220. *Frink Lighting Service for Banks and Insurance Companies. Reflectors. Catalog No.* 425. A very interesting treatise on the lighting of offices; with details of illustrations and description of lamps and reflectors. Contains a list, covering several pages, of banks using Frink Desk and Screen Fixtures. 30 pp. Ill. 8¾ x 11 in.

Harvey Hubbell, Inc., Bridgeport, Conn.

401. *Hubbell Flush Door Receptacles.* Description of a safe, convenient and practical wall outlet de luxe for fine residences, clubs, hotels, public buildings and offices. 4 pp. Ill. 8 x 10 in.

Lightoller Company, 569 Broadway, New York, N. Y.

412. *After Sunset Lightoliers.* A beautiful catalog and price list of electric lighting brackets and suspension fixtures. 16 pp. Ill. 8 x 10¼ in.

National X-Ray Reflector Company, 235 Jackson Blvd., Chicago, Ill.

465. *How to Know and Have Good Lighting.* A treatise on the development of lighting. Beautifully illustrated photographs and descriptions of lighting installations in every kind of building from a variety of applications including ceiling fixtures, art lamps, floor pedestals, cornices, coves and other special adaptations. It also gives a list of buildings where X-Ray Eye Comfort Lighting has been used. Size 7⅝ x 10 inches. 48 pp.

The Reflectolyte Co., 914 J Pine St., St. Louis, Mo.

244. *"Reflectolyte" Catalog No.* 4. Description, Engineering Data, descriptions and prices of the well known type of reflector and suspended bowl lighting fixtures. 32 pp. Ill. 7¼ x 10¼ in.

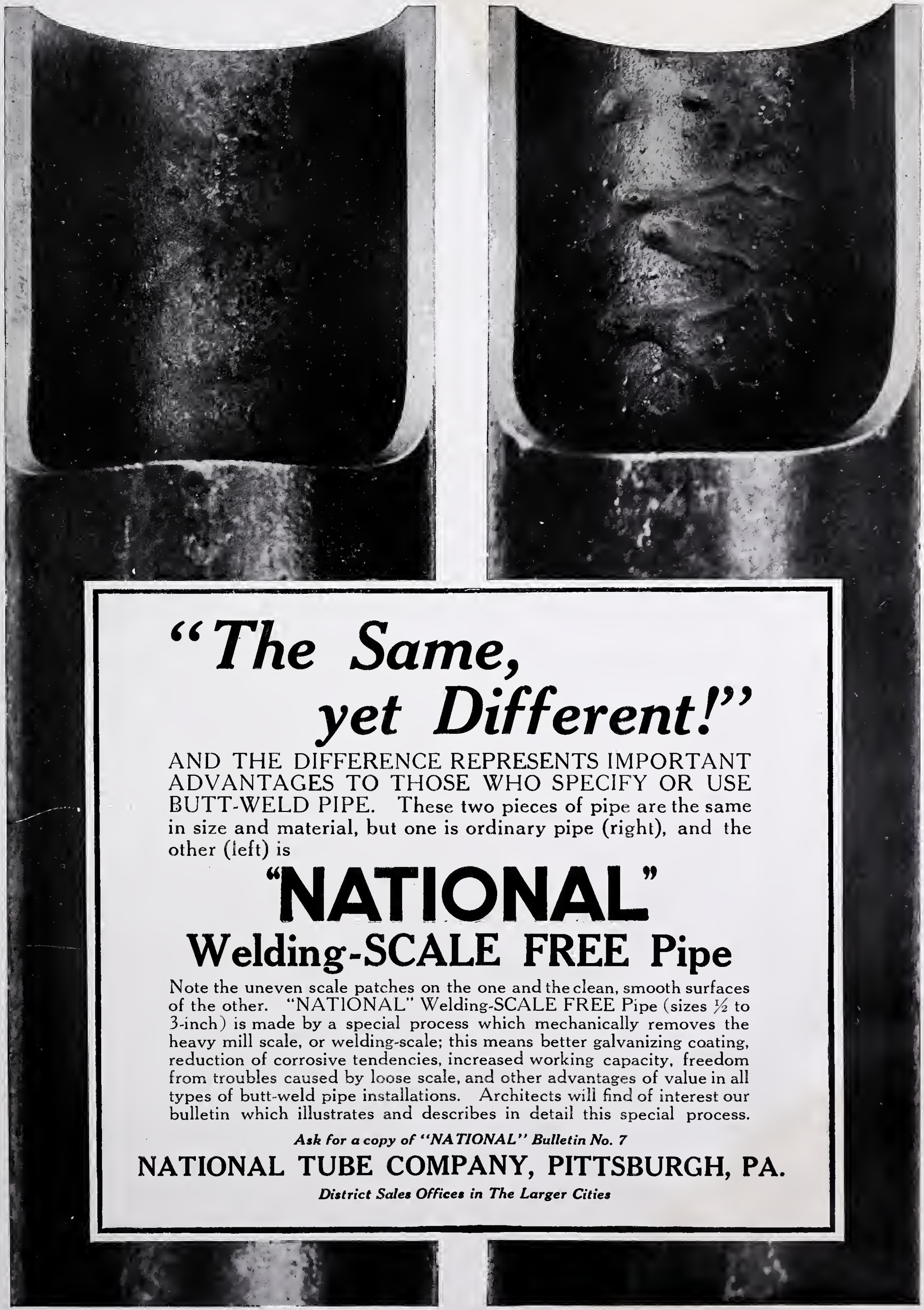
Mitchell Vance Co., Inc., 503-511 West 24th St., New York, N. Y.

369. *Catalog No.* 25. A descriptive catalog, with prices, of the "T. R. B." Lighting Unit, for perfect distribution of light without glare and without shadows. 24 pp. Ill. 8 x 10 in.

LINOLEUM—See also Flooring

Armstrong Cork Co., Linoleum Department, Lancaster, Pa.

223. *Armstrong's Linoleum Floors.* A handbook for architects, published in the file form of (8½ x 11 in.) recommended by the American Institute of Architects. A technical treatise on Linoleum containing general information, tables of grades, gauges and weights, specimen specifications, and detailed directions for laying linoleum. Profusely illustrated in colors.



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AND THE DIFFERENCE REPRESENTS IMPORTANT ADVANTAGES TO THOSE WHO SPECIFY OR USE BUTT-WELD PIPE. These two pieces of pipe are the same in size and material, but one is ordinary pipe (right), and the other (left) is

"NATIONAL"

Welding-SCALE FREE Pipe

Note the uneven scale patches on the one and the clean, smooth surfaces of the other. "NATIONAL" Welding-SCALE FREE Pipe (sizes ½ to 3-inch) is made by a special process which mechanically removes the heavy mill scale, or welding-scale; this means better galvanizing coating, reduction of corrosive tendencies, increased working capacity, freedom from troubles caused by loose scale, and other advantages of value in all types of butt-weld pipe installations. Architects will find of interest our bulletin which illustrates and describes in detail this special process.

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REFERENCE LIST OF BUSINESS LITERATURE—Continued

LOCKERS, STEEL—See Factory Equipment

LUMBER

The Long-Bell Lumber Co., R. A. Long Building, Kansas City, Mo.
203. *From Tree to Trade.* This book tells the story of the manufacture of lumber. Gives an idea of the scope of the business and the care and attention given to the manufacture and grading of Long-Bell trade-marked products. 100 illustrations. 48 pp. 8½ x 11 in.

The Pacific Lumber Company of Illinois, 2060 McCormick Bldg., Chicago, Ill.
363. *Construction Digest*— The use of California Redwood in residential and industrial construction. Contains illustrations, grading rules, specifications and other technical data for architects and builders. 16 pp. Ill. 8½ x 11 in.
364. *Engineering Digest*— The use of California Redwood in industrial construction and equipment for factories, railroads, mines and engineering projects. 16 pp. Ill. 8½ x 11 in.

LUMBER, ASBESTOS

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa.
54. *Ambler Asbestos Building Lumber.* Catalog illustrated. Describes uses of this fireproof product for both exteriors and interiors. Tables of sizes and illustrations of various types of buildings in which it has been used. Size 8½ x 11 in. 32 pp.

MANTELS

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.
90. *Wood Mantels.* Portfolio. Woodmantel designs of various types and openings, giving dimensions, projections and showing fireplace grate designs. Size 9 x 6¼ in. 32 pp.

MEMORIALS

Harrison Granite Co., 200 Fifth Ave., New York.
151. *Memorials.* Booklet showing photographic illustrations and text of monumental pieces and memorials, of granite, ranging from monuments of public interest to simple private tributes. Size 4 x 9 in. 24 pp.

METALS—See also Iron and Steel

American Brass Co., Main Office, Waterbury, Conn.
138. *Price List and Data Book.* Illustrated. Loose-leaf Catalog. Covers entire line of Sheets, Wire Rods, Tubes, etc., in various metals. Useful tables. Size 3⅞ x 7 in. 168 pp.
139. *Illustrated Pamphlets.* Describes the use and adaptability of Extruded Architectural Shapes, Benedict Nickel, Brass and Copper Pipe in Iron Pipe sizes for plumbing installations. 8½ x 11 in.
385. *Copper Products.* Illustrated price list and tables of weights. Covers copper for roofing purposes, including strip copper for forming into leaders, gutters, valleys, flashings, etc. 64 pp.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.
452. *Reference Book. Pocket Edition.* Covers the complete line of Sheet and Tin Mill Products. 168 pp. Ill. 2½ x 4½ in.

Bridgeport Brass Co., Bridgeport, Conn.
483. *Seven Centuries of Brass Making.* A brief history of the ancient art of brass making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—covering tubular, rod and ornamental shapes. 80 pp. Ill. 8 x 10½ in.

The Cincinnati Mfg Co., Cincinnati Ohio.
349. *Ornamental Iron and Bronze.* A catalog of metal work for banks, mausoleum bronze and tablets, hollow metal and kalamein doors, elevator cars and enclosures, builders' iron and wire work. 164 pp. Ill. 7½ x 10¾ in.

Copper & Brass Research Association, 25 Broadway, New York, N. Y.
466. *How to Build a Better Home.* A book on building written for the prospective builder. It contains keyed illustrations of houses and details of houses and should be of value to architects in explaining technical terms to clients. 30 pp. Ill. 7¾ x 10½ in.

Rome Brass & Copper Company, Rome, N. Y.
473. *Price List No.* 70. A loose-leaf binder containing full price list of Rome Quality products, together with useful tables. 5⅛ x 7¼ in.

MILLWORK—See also Lumber—Building Construction—Doors and Windows

MORTAR—See also Cement

Louisville Cement Company, Inc., Louisville, Ky.
311. *Brixment, the Perfect Mortar.* The reading of this little book gives one a feeling that definite valuable information has been acquired about one of the oldest building materials. Modern science has given the mason a strong water-resisting mortar with the desirable "feel" of the best rich lime mortar. 16 pp. Ill. in colors. 5½ x 7¾ in.

MOLDINGS, METAL

National Metal Molding Co., 25 Fulton Bldg., Pittsburgh, Pa.
85. *Bulletins.* Bound in a standard correspondence folder suitably indexed for convenient filing, describes complete line of metal moldings.

National Metal Molding Co., 25 Fulton Bldg., Pittsburgh, Pa.
152. *Hand-book for the Man on the Job.* An Illustrated book of fittings and methods with description and instructions for installing National Metal Molding under all conditions; a book meant to be conveniently carried and used on the job. Size 4⅜ x 6 in. 102 pp.

ORNAMENT METAL WORK—See also Architectural Iron Work—Metals

Newman Manufacturing Company, 416 Elm St., Cincinnati, Ohio.
229. *Newman Ornamental Metal Work—Catalog A.* Booklet showing installations of brass and bronze railings, door hardware, grille work, etc., in banks, theatres and other public buildings. Also shows lighting fixtures and special metal work of all descriptions. 64 pp. Ill. 8 x 11 in.

PAINTING

Spray Engineering Company, 60 High Street, Boston, Mass.
F481. *Bulletin No.* 375. *Modern Method of Applying Paint.* This bulletin illustrates the use of Spraco Pneumatic Painting Equipment on various classes of work. Also contains information on the advantages of painting by compressed air over the use of hand brushes and gives a brief description of the various outfits. 8 pp. Ill. 7½ x 10½ in.

PAINTS, STAINS, VARNISHES—See also Waterproofing

Breinig Brothers, Inc., Third and Grand Sts., Hoboken, N. J.
210. *Color Cards;* contains suggestions for color combinations and painting in general; with descriptions for use and illustrations of the following paints; house paint, metal protective paint, shingle stain, enamel tints, floor and deck paint, "Wallsheen" (flat wall paint), barn and silo paint, screen paint.
211. *Cartons;* contains panels illustrating various effects obtained on woods by the use of Breinig Brothers Wood Finishes.

Samuel Cabot, Inc., 141 Milk St., Boston, Mass.
342. *Cabot's Creosote Stains.* Description of a standard stain for shingles, siding, boarding and timbers, with covering capacity and specifications. 16 pp. Ill. 4 x 8½ in.

Carter White Lead Co., 12,042 South Peoria St., Chicago, Ill.
270. *The Carter Paint Calculator.* A valuable book containing answers and solutions to common paint problems; gives sample estimates; data useful to both architect and master painter. Black Fabrikoid cover. Vest pocket size 2½ x 4½ in. 70 pp. Sent postpaid anywhere on request.

Joseph Dixon Crucible Co., Jersey City, N. J.
324. *Dixon's Silica-Graphite Paint.* A pamphlet describing the physical properties of silica-graphite paint and especially the wide difference between it and other protective paints. Contains also sample color card with specifications. 20 pp. and 6 pp. in color card. Ill. 3¼ x 6¼ in.

Samuel H. French & Co., Philadelphia, Pa.
312. *French's Paints and Varnishes.* A catalog and price list of paints, stains, varnishes, mortar colors, cement colors and materials for plasterers, with instructions for selection of colors, etc. 44 pp. Ill. 4 x 8 in.

A. C. Horn Company, New York, N. Y.
300. *Color Card and Brief Description of various Horn Painting Specialties.* Koncrex, Protective Floor coating; Aclac, Service Paint; Symentrin, Flat Wall Finish; Symentrex (Liquid Concrete), a Complete Finish for Concrete or Brick; Horns House Paints (Gov't Specification).

The New Jersey Zinc Co., 160 Front St., New York, N. Y.
227. *Painting Specifications.* A booklet full of useful information concerning paint mixtures for application on various surfaces.

Parker, Preston & Co., Inc., Norwich, Conn.
357. *Art in Shingle Stains.* Description of waterproof, odorless shingle stains and waterproof coatings for walls and floors; with covering capacities and directions for use. 27 pp. 3 x 4½ in.

Ripolin Co., The, Cleveland, Ohio.
419. *Ripolin Specification Book,* 8 x 10¼ in., 12 pp. Complete architectural specifications and general instructions for the application of Ripolin, the original Holland Enamel Paint. Directions for the proper finishing of wood, metal, plaster, concrete, brick and other surfaces, both interior and exterior, are included in this Specification Book.

The Sherwin-Williams Co., 601 Canal Road, Cleveland, Ohio.
278. *Painting and Varnishing Specifications.* A complete specification text book on the painting and finishing of architectural surfaces. 30 pp. 8½ x 11 in.
279. *Portfolio of Flat-Tone Multi-Color Effects.* Containing samples and complete specifications for securing the latest and most beautiful effects in interior wall decoration. 2¼ x 6 in.

Increasing Public Appreciation of High Quality Materials

Some day, perhaps, the architect will no longer hear such comments from property owners as "Wouldn't a bit cheaper material do as well as that?"—"Can't we save some money there?"

When he does it will be a better time for the building industry and all concerned.

Breinig Brothers feel that it is part of the duty of all manufacturers of high quality products to hasten that time as much as possible.

So you will find that in all our contact with the public we continually stress the *economy* of using only the best materials.

We are satisfied to depend on the development of a higher public standard of quality to increase the demand for Breinig Brothers' Varnishes, Enamels and Paints.

Our Architectural Service

Breinig Brothers, Inc., offer their specialized knowledge and facilities to architects who are interested in the working out of novel and distinctive effects in wood finishing.

An architectural representative will be glad to call on architects in greater New York and take up such problems in person. Please feel free to write or telephone us at any time. (Telephone: Hoboken 2900.)

Similar service will be rendered by mail to architects in other cities.

This service places the architect under no obligation.

"Save the surface and you save all"—*Paint & Varnish*

BREINIG BROTHERS INC
HOBOKEN N.J.
VARNISHES, ENAMELS & PAINTS
FOR LASTING BEAUTY & PROTECTION

REFERENCE LIST OF BUSINESS LITERATURE—Continued

LOCKERS, STEEL—See Factory Equipment

LUMBER

The Long-Bell Lumber Co., R. A. Long Building, Kansas City, Mo.
203. *From Tree to Trade.* This book tells the story of the manufacture of lumber. Gives an idea of the scope of the business and the care and attention given to the manufacture and grading of Long-Bell trade-marked products. 100 illustrations. 48 pp. 8½ x 11 in.

The Pacific Lumber Company of Illinois, 2060 McCor-Mick Bldg., Chicago, Ill.
363. *Construction Digest*— The use of California Redwood in residential and industrial construction. Contains illustrations, grading rules, specifications and other technical data for architects and builders. 16 pp. Ill. 8½ x 11 in.
364. *Engineering Digest*— The use of California Redwood in industrial construction and equipment for factories, railroads, mines and engineering projects. 16 pp. Ill. 8½ x 11 in.

LUMBER, ASBESTOS

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa.
54. *Ambler Asbestos Building Lumber.* Catalog illustrated. Describes uses of this fireproof product for both exteriors and interiors. Tables of sizes and illustrations of various types of buildings in which it has been used. Size 8½ x 11 in. 32 pp.

MANTELS

Edwin A. Jackson & Bro., Inc., 50 Beekman St., New York.
90. *Wood Mantels.* Portfolio. Woodmantel designs of various types and openings, giving dimensions, projections and showing fireplace grate designs. Size 9 x 6¼ in. 32 pp.

MEMORIALS

Harrison Granite Co., 200 Fifth Ave., New York.
151. *Memorials.* Booklet showing photographic illustrations and text of monumental pieces and memorials, of granite, ranging from monuments of public interest to simple private tributes. Size 4 x 9 in. 24 pp.

METALS—See also Iron and Steel

American Brass Co., Main Office, Waterbury, Conn.
138. *Price List and Data Book.* Illustrated. Loose-leaf Catalog. Covers entire line of Sheets, Wire Rods, Tubes, etc., in various metals. Useful tables. Size 3⅞ x 7 in. 168 pp.
139. *Illustrated Pamphlets.* Describes the use and adaptability of Extruded Architectural Shapes, Benedict Nickel, Brass and Copper Pipe in Iron Pipe sizes for plumbing installations. 8½ x 11 in.
385. *Copper Products.* Illustrated price list and tables of weights. Covers copper for roofing purposes, including strip copper for forming into leaders, gutters, valleys, flashings, etc. 64 pp.

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.
452. *Reference Book. Pocket Edition.* Covers the complete line of Sheet and Tin Mill Products. 168 pp. Ill. 2½ x 4½ in.

Bridgeport Brass Co., Bridgeport, Conn.
483. *Seven Centuries of Brass Making.* A brief history of the ancient art of brass making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—covering tubular, rod and ornamental shapes. 80 pp. Ill. 8 x 10½ in.

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FOR LASTING BEAUTY & PROTECTION

REFERENCE LIST OF BUSINESS LITERATURE—Continued

PILES, CONCRETE

Raymond Concrete Pile Co., 140 Cedar St., New York.
156. *Raymond Concrete Piles—Special Concrete Work.* A booklet with data concerning the scope of the Raymond Concrete Pile Co., for special concrete work. It classifies piles, showing by illustration, text and drawings, the relative value of special shape and manufacture of piles. It gives formulæ for working loads, and relative economy. Size 8½ x 11⅛ in. 60 pp.

MacArthur Concrete Pile and Foundation Co., 12 John St., New York, N. Y.
323. *Concrete Pile Standards.* This treatise gives standard details for pile caps with standard specifications for concrete piles and has a valuable chapter entitled, "How a Pile Supports Its Load." Useful tables are presented with worked examples of computations for typical and unusual conditions. 54 pp. Ill. 9 x 12 in.

PIPE—See also Metals

The Duriron Company, Dayton, Ohio.
256. *Acid Proof Drain Pipe and Sanitary Fittings. A Message to Owner, Architect and Sanitary Engineer. Bulletin* 126. This bulletin explains the advantages of Duriron Pipe to resist the corrosive action of acids and alkalis. Contains drawings, tables of dimensions and full instructions for installation. 8 pp. Ill. 8 x 10½ in.

National Tube Co., Frick Bldg., Pittsburgh, Pa.
437. *National Bulletin No.* 25. This bulletin is a valuable treatise on corrosion in pipes; flow of water; flow of steam; strength of pipes of various sizes when used as beams and as columns, etc., numerous tables and diagrams. 86 pp. Profusely illustrated. 8½ x 11 in.

A. Wyckoff & Son Co., Elmira, N. Y.
397. *Wyckoff Wood Pipe. Catalog No.* 42. A description of machine-made woodstave pipe and Wycoff's cypress steam pipe casing. Contains also a number of pages of useful formulas and tables for hydraulic computations. 92 pp. Ill. 6 x 9 in.

PIPE COVERING

The Philip Carey Co., Lockland, Cincinnati, Ohio.
379. *Pipe and Boiler Coverings. Catalog* 1362. A catalog and manual of pipe and boiler coverings, cements, etc. Contains a number of valuable diagrams and tables. 71 pp. Ill. 6 x 9 in.

PLASTER BASE—See also Stucco Base

PLUMBING EQUIPMENT—See also Drains

A. P. W. Paper Co., Albany, N. Y.
326. *Toilet Cabinets.* A specification card for letter file containing complete descriptions with dimensions, capacity, etc., of Onliwon Cabinets for toilet paper. Illustrated.

Bridgeport Brass Co., Bridgeport, Conn.
461. *Plumbing Supplies.* Catalog of adjustable swivel traps; basin and bath supplies and wastes; basin and sink plugs; low tank bends; iron pipe sizes of brass pipe. 20 pp. Ill. 8 x 10½ in.

C. F. Church Manufacturing Company, 430 Williams St., Holyoke, Mass.
430. *"White Pyralin" Catalog W. S.* A catalog of White Pyralin closet seats. They are made of the best material and covered with Pyralin, a pure white substance which is applied in sheet form and should not be confused with sprayed or enameled products. The surface is non-porous; can be washed with soap and water; does not turn yellow and is guaranteed not to crack or chip. 24 pp. Ill. 6 x 9 in.

Crane Company, 836 So. Michigan Ave., Chicago, Ill.
240. *General Plumbing Catalogue.* A very complete and well illustrated booklet describing the complete line of Crane plumbing goods. 800 pp. Ill. 8½ x 11 in.

Philip Haas Co., Dayton, Ohio.
450. *Catalog B.* A catalog of water closets which includes a combination for every type or class of service. Roughing in measurements are given for use of draftsmen. 91 pp. Ill. 6 x 9 in.

The Imperial Brass Co., 1200 W. Harrison St., Chicago, Ill.
95. *Catalog C.* Loose-leaf catalog. Illustrated. Describes Watrous equipment; drinking fountains, lavatories, sinks, flushing valves, urinals, seats and all other necessary equipment of the best types of plumbing fixtures. Size 8½ x 10¾ in. 62 pp.
98 *Watrous Gravity Liquid Soap System.* Loose-leaf Catalog. Giving photographs of all details of equipment with description of their use. Size 8½ x 10¾ in. 5 pp.

Jenkins Bros., 80 White St., New York, N. Y.
236. *Jenkins Valves for Plumbing Service.* This booklet contains all necessary information about Jenkins Valves commonly used in plumbing work. 16 pp. Ill. 4¼ x 7¼ in. Stiff paper cover.

Kohler Company, Kohler, Wisconsin.
209. *"Kohler of Kohler."* A booklet on enameled plumbing ware describing processes of manufacture and cataloging staple baths, lavatories, kitchen sinks, slop sinks, laundry trays, closet combinations. 48 pp. Ill. 5⅛ x 8 in. Roughing-in Measurement Sheets 5 x 8 in.

Thomas Maddock's Sons, Trenton, N. J.
259. *General Catalog.* Contains complete description of the full line of fixtures styled the "Highest Grade Standardized Plumbing Fixtures for Every Need." 94 pp. Ill. 5 x 7½ in.
260. *Specifications for Plumbing Fixtures.* Contains tables of specifications for industrial buildings, schools, apartments, hotels, etc. 8 pp. Ill. 9 x 12 in.

The Vulcan Brass Manufacturing Co., Cleveland, Ohio.
214. *Paragon Ball Bearing Self Closing Faucets, Bibbs and Stops—Catalog B.* Illustrated book, showing sectional drawings, illustrations and text describing "Paragon" self-closing work, high pressure ball cocks, parts and valves.

Wheeling Sanitary Manufacturing Co., Wheeling, W. Va.
388. *Complete Catalog "E."* Describes all clay Sanitary Baths, Lavatories, Kitchen Sinks, Laundry Trays, Drinking Fountains and Urinal Stalls of Semi-vitreous Porcelain ware; also Closet Bowls, Flush Tanks, Lavatories, Basins, Urinals and Drinking Fountains of White Vitreous Chinaware. 125 pp. Ill. 5 x 8 in.

Wheeling Sanitary Manufacturing Co., Wheeling, W. Va.
398. *Combination Bath.* A circular describing a new form of bath which combines a seat bath, foot bath, shower bath and child's bath. Occupies much less space than the ordinary bath tub. 12 pp. Ill. 3½ x 6¼ in

POTTERY AND FINE TILE

The Rookwood Pottery Company, Cincinnati, Ohio.
410. *Rookwood, Cincinnati.* A booklet dealing in a general way with the various products of this well known company. It is illustrated and contains 8 pages, 6x9 in. The company issues many small booklets, each one dealing with a special product.

PUMPS

The Dayton Pump and Manufacturing Company, Dayton, Ohio.
475. *Electric House Pumps and Water Supply Systems.* A heavy paper binder containing illustrated bulletins 8½ x 11 in. These bulletins describe pumps as well as complete automatic electric and gasoline water supply systems and all accessories, together with specifications, detail drawings and tables of dimensions. 48 pp.

Taber Pump Co., Buffalo, N. Y.
477. *Bulletin* 131. *Type S.* A pump bulletin containing valuable hints for the selection, installation and operation of pumps, together with a folder blue print containing a table of friction losses in pipes from ¾-in. to 3½-in. diameter with flow of from 5 to 2500 G.P.M. 18 pp. Ill. 6 x 8½ in.

REFRIGERATION

The Automatic Refrigerating Co., Hartford, Conn.
298. *The Mechanics of Automatic Refrigeration* and *Automatic Refrigeration for Hospitals and Sanatariums.* Two essential booklets for the library of designers and specification writers. 24 and 28 pp. Ill. 8½ x 11 in.
370. *Automatic Refrigeration for Retail Markets.* A valuable treatise on the subject matter mentioned in the title. 30 pp. Ill. 8½ x 11 in.

The Jewett Refrigerator Company, 27 Chandler Street, Buffalo, N. Y.
231. *Refrigeration and Health. Vital Facts You Ought to Know.* A booklet outlining the basic requirements of a good refrigerator and explaining how to use a refrigerator to secure best results 16 pp. Ill. 4¾ x 7¾ in.

REFRIGERATORS

McCray Refrigerator Co., Kendallville, Ind.
472. *Refrigerators and Cooling Rooms, Cat.* 53. A catalog of cooling equipment for hotels, restaurants, hospitals, institutions, colleges and clubs. Catalog No. 96 deals with refrigerators for residences. 52 pp. each. Ill. in colors. 7½ x 10 in.

ROOFING—See also Slate—Metals—Shingles

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.
463. *Copper—Its Effect Upon Steel for Roofing Tin.* Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy. 28 pp. Ill. 8½ x 11 in.

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa.
53. *Ambler Asbestos Corrugated Roofing.* Catalog gives complete data for specifying, drawings, methods of application, tables, etc. Size 8½ x 11 in. 20 pp.

The Barber Asphalt Paving Company, Land Title Bldg., Philadelphia, Pa.
422. *Standard Trinidad Built-Up Roofing Specifications.* Contains two specifications for applying a built-up roof over boards and two for applying over concrete. Gives quantities of materals and useful data. 8 pp. 8 x 10½ in. Ask at same time for Good Roof Guide Book, 32 pp. Ill. 6 x 9 in.

The Barrett Company, 40 Rector St., New York, N. Y.
403. *Roof Flashings Handbook.* A complete descriptive account, illustrated with photographs and architectural blue print drawings, of the new Barrett Standard Roof Flashings. The various types are shown with specifications for their installation. 50 pp. Ill. 6 x 9 in.

KEYSTONE COPPER STEEL

YOUR sheet metal problems become our problems—in fact, the interest of our organization in the permanent success of your product, wherever Steel Sheets and Tin Plates are involved, is second only to your own. It will pay you to tie to the experience and service we offer—they will prove a valuable asset to you in your business.

KEYSTONE
COPPER STEEL

Soft and ductile of itself, copper is the martial music that adds the grit of fight wherever rust threatens. It is steel's most effective ammunition. Use it for longer wear—and greater permanence.

For roofing, siding, gutters, spouting, eaves trough, sheet metal and tin work, use KEYSTONE quality Galvanized Sheets and Roofing Tin Plates—better for both architect and owner. Keystone superiority has been proved by actual time and weather tests. Sold by leading metal merchants.

We manufacture Sheet and Tin Mill products for all purposes. Write for full information and our interesting booklet—"Copper—Its Effect upon Steel for Roofing Tin."

American Sheet and Tin Plate Company
General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES
Chicago Cincinnati Denver Detroi New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle

REFERENCE LIST OF BUSINESS LITERATURE—Continued

ROOFING—See also Slate—Metals—Shingles

The Barrett Company, 40 Rector St., New York, N. Y.
404. *Architectural Service Sheets.* Sheets containing valuable data and information for architects, each dealing with the following products separately: Holy Roof Connection; Barrett Roof Flashings; Barrett Specification Roofs. Full specifications given in each case. Illustrated with photographs and architectural drawings. 16½ x 22½ in.

John Boyle & Co., Inc., 112-114 Duane St., New York, N. Y.
212. *Boyle's Bayonne Roof and Deck Cloth.* List B 93. A prepared roofing canvas guaranteed waterproof for decks and the roofs and floors of piazzas, sun-parlors, sleeping porches, etc.

The Copper and Brass Research Association, 25 Broadway, New York, N. Y.
468. *Copper Roofing.* Weights of various roofing materials. Up-to-date practice in the laying of copper roofs—Batten or wood rib method, Standing seam method, Flat copper roofs, Copper shingles, Suggestions for avoiding error and obtaining the full value of copper, Decorative effects and how to obtain them. Flashings, reglets, gutters and leaders. Cornices. Copper-covered walls. Specifications. 32 pp. Ill. 8½ x 11 in.

The Philip Carey Co., Lockland, Cincinnati, Ohio.
378. *Architects' Specification Book on Built-up Roofing.* A manual for detailers and specification writers. Contains complete details and specifications for each type of Carey Asphalt Built-up Roof. 20 pp. Ill. 8½ x 11 in.

The John D. Emack Co., 112 So. 16th St., Philadelphia, Pa.
251. *Old Stonefield Roofs.* An envelope portfolio containing two plates in color and 20 views of houses having Stonesfield roofs. The accompanying 8 pages of text describe the manufacture and laying of Old Stonesfield slate roofs 5½ x 6⅝ in.

Ludowici-Celadon Co., Chicago, Ill.
154. *The Roof Beautiful.* Booklet. Well illustrated with photographs and drawings, giving history and origin of roofing tile, and advantages over other forms of roofing. Types shown by detailed illustrations. Size 8 x 10¼ in. 32 pp.

Porete Mfg. Co., 26 Verona Ave., Newark, N. J.
258. *Porete Roof-decks.* An illustrated circular describing Porete (a new light-weight concrete) for use in fireproof roofs for all buildings. 4 pp.

Vendor Slate Co., Easton, Pa.
333. Occasional brochures on architecturally pertinent phases of roofing slate sent on request. See also listing under Slate.

ROOF-LIGHTS—See Glass Constructions

SCREENS

American Wire Fabrics Company, 208 So. La Salle St., Chicago, Illinois.
305. *Catalog of Screen Wire Cloth.* A catalog and price list of screen wire cloth, black enamelled, galvanized, aluminoid, copper bronze. 30 pp. Ill. 3½ x 6¼ in.

The Higgin Manufacturing Co., 5th and Washington Ave., Newport, Ky.
353. *Screen your Home in the Higgin Way.* A description of Higgin door and window screens with practical data. 16 pp. Ill. 8½ x 11½ in.

The New Jersey Wire Cloth Company, 614 South Broad St., Trenton, N. J.
409. *A Matter of Health and Comfort. Booklet No. 231.* A booklet telling all about screens, the durability of copper and its superiority over all other metals for screen purposes. 16 pp. Ill. 5x7¼ in.

SCREW HOLES

The Stine Screw Holes Co., Waterbury, Conn.
213. *The Only Screw Holes in the World.* A four-page leaflet, 8½ x 11 in., showing exact sizes with prices for immediate delivery. Screw Holes are driven into a drilled hole with a hammer. When Driving Head is removed a permanent Brass Screw Hole is left.

SHEATHING—See also Stucco Base

The Hydrex Asphalt Products Corp., 120 Liberty St., New York.
64. *Sound Deadening Insulation.* Illustrated and descriptive booklet. Specifications and suggestions for use of Hydrex "saniflor" Sound Deadening Felt. Size 8½ x 11 in. 12 pp.

SHINGLES—See also Roofing

Illinois Zinc Company, 280 Broadway, New York, N. Y.
417. *The Roof That's Always New.* A description of pre-oxidized zinc shingles. They have the shape of wooden butt-shingles and a handsome weather gray color so they are as beautiful and artistic as wooden shingles. 11 pp. Ill. 3½ x 6 in.

The Philip Carey Co., Lockland, Cincinnati, Ohio.
381. *Carey Asfaltslate Shingles.* Folder containing illustrations of attractive buildings and residences on which Carey Asfaltslate Shingles have been used. Describes this type of shingle, showing its special claims and advantages.

SIDEWALK LIGHTS—See also Vault Lights

SKYLIGHTS—See also Glass Constructions—Vault Lights

H. H. Robertson Company, 1st National Bank Bldg., Pittsburgh, Pa.
87. *Robertson Glazing Construction.* Booklet, illustrated. Types of construction used in industrial, commercial and educational buildings, residences and hospitals, giving description, diagrams, tables of sizes and details of construction. Size 8 x 10½ in. 40 pp.

SLATE—See also Roofing

Vendor Slate Co., Inc., Easton, Pa.
332. *The Vendor Book of Roofing Slate for Architects.* Contains original information on slate in various architectural uses; history, geology, sundry practical matters; complete descriptive classification; extended treatise on architectural roof design and specifications. 24 pp. Ill. 8½ x 11 in.

STAINS—See also Paints, Stains, Varnishes

STONE

Indiana Limestone Quarrymen's Assn., P. O. Box 503, Bedford, Indiana.
37. *Indiana Limestone.* Illustrated booklet, Vol. I, of the Limestone Library. Size 6 x 9 in. 36 pp.
147. *Designs for Houses of Indiana Limestone.* A booklet of the best designs submitted in a competition for a detached residence faced with Indiana Limestone. Size 8½ x 11 in. 32 pp.
265. *Folders: Series D.* Structural detail and data sheets showing methods of detailing cut stone work in connection with modern building construction. 4 pp. each. 8½ x 11 in.
366. *Standard Specifications for Cut Stone Work.* This is Vol. III, Series "A-3," Service publications on Indiana Limestone, containing Specifications and Supplementary Data, relating to best methods of specifying and using this stone for all building purposes. This valuable work is not for general distribution. It can be obtained only from a Field Representative of the Association or through direct request from architect written on his letter head. 56 pp. Ill. 8½ x 11 in.

National Building Granite Quarries Asso., Inc., 31 State Street, Boston, Mass.
416. *Architectural Granite No. 1 of the Granite Series.* This booklet contains descriptions of various granites used for building purposes; surface finishes and how obtained; profiles of moldings and how to estimate cost; typical details; complete specifications and 19 plates in colors of granite from various quarries. 16 pp. Ill. 8½ x 11 in.

STORE FRONTS

Brasco Mfg. Co., Chicago Ill.
56. *Brasco System of Hollow Metal Store Front Design.* Folio of Detail Sheets. Full size detail sheets 1, 2, 3 and 4. Corner bar, division bar, reverse bar and three way bar, head transom, sill and jamb sections. Sheets 18 x 22½ in.
57. *Hester System Store Front Construction and Design.* Folio of Details Sheets. Full size detail sheets, a, b, c and d, of hollow metal store front construction, giving full size sections of head, transom, sill and jamb with moulding profiles and bar cover to house awning construction. Sheets 18 x 22½ in.

Detroit Show Case Co., Detroit, Mich.
77. *Designs.* A booklet. Store fronts and display window designs, giving plans and elevations, and descriptions. Size 9¼ x 12 in. 16 pp.
78. *Details.* Sheets of full size details of "Desco" awning transom bar covers, sill covers, side, head and jamb covers, ventilated hollow metal sash and profile of members. Size 16 x 21½ in. 3 sheets.

The Kawneer Company, Niles, Mich.
467. *A Collection of Successful Store Front Designs.* Illustrations of recently erected modern store fronts with all framing covered with solid copper. Maximum show window surface secured by these designs. Many classes of occupancy shown. 64 pp. Ill. 6¾ x 9¼ in.

Zouri Drawn Metals Co., Chicago Heights, Ill.
407. *Architects' Catalog.* In addition to general descriptive matter this catalog contains a true copy of the approval of the Underwriter's Laboratories and a proper glazing specification, based on the Underwriter's report. 88 pp. Ill. 8¾x 11¾ in.

STOVES

George M. Clark & Co., Division of American Stove Co., 179 No. Michigan Ave., Chicago, Ill.
458. *Gas Stove Catalog, No.* 114. A complete catalog of Clark Jewell gas stoves; water heaters; room heaters; ovens; waffle irons; cake bakers; hot plates; etc. 76 pp. Ill. 6 x 9 in.

Danglar Stove Co., Division of American Stove Co., Cleveland, Ohio.
459. *Measured Heat Cookery, Catalog No.* 161. A catalog of gas cooking stoves, ranges and water heaters; featuring the Lorain Oven Heat Regulator, a device for obtaining uniform heat without constant supervision. 72 pp. Ill. 7½ x 10¾ in.

STUCCO BASE

The Bishopric Manufacturing Company, Cincinnati, Ohio.
451. *Bishopric for All Time and Clime.* A booklet describing Bishopric materials; giving building data, detail drawings and specifications. Illustrated with half tones from photographs of houses built of Bishopric materials. 52 pp. Ill. 8 x 10½ in.

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EVERlasting! And a joy forEVER!

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Four permanent colors—Newport Gray, Natural Slate, Tile Red and Moss Green—in three styles—American, French and Honeycomb—give architects and builders an opportunity to work out a great variety of unusual roof effects.

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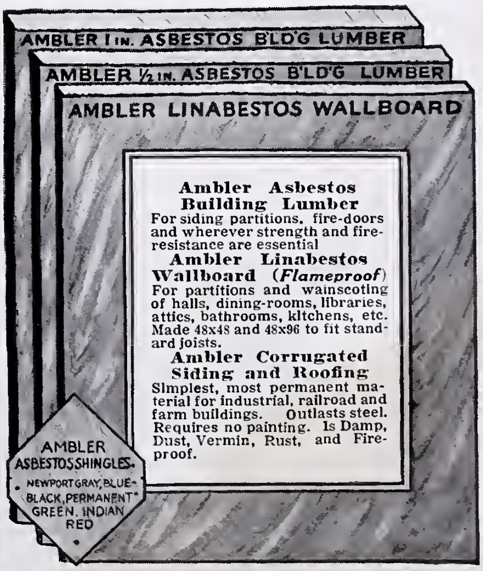
AMBLER 1 IN. ASBESTOS B'LD'G LUMBER
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Simplest, most permanent material for industrial, railroad and farm buildings. Outlasts steel. Requires no painting. Is Damp, Dust, Vermin, Rust, and Fireproof.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

STUCCO—See also Cement

American Magnesia Products Company, 5730 Roosevelt Road, Chicago, Ill.

284. *The Stucco Beautiful.* A booklet describing Kragstone Stucco with pictures of buildings on which it has been used. 12 pp. Ill. 4 x 9 in.

The Atlas Portland Cement Co., 25 Broadway, New York, N. Y.

280. *The Stucco House.* Contains many beautiful illustrations of houses finished with stucco and selected particularly for their architectural value. Detailed illustrations of stucco surface textures and drawings showing wall construction with revised specifications covering application of stucco. 96 pp. 8½ x 11 in. Price 50 cents.

National Kellastone Company, 155 East Superior St., Chicago, Ill.

302. *Specifications for Stucco Work.* A booklet containing complete specifications in detail for the use of Kellastone stucco for new buildings as well as the "overcoating" of old buildings. 13 sheets of text, 2 sheets of illustrations. 8 x 11 in.

303. *The Story of Kellastone Imperishable Stucco.* In this most interesting book the merits of Kellastone are set forth in a convincing manner. Every page contains pictures of beautiful houses stuccoed with Kellastone and there are two pages in color. 22 pp. Ill. 8½ x 12 in.

TELEPHONES

Federal Telephone & Telegraph Co., Buffalo, N. Y.

344. *Federal Apartment House Telephones.* A short illustrated description of four classes of telephone equipment for apartment houses; Vestibules, the Suites, Rear Entrance, and the Janitor's Headquarters. 6 pp. Ill. in colors. 4 x 8 in.

345. *Interior Telephone Systems. Bulletin No.* 610. A detailed description of Selective Talking and Ringing Systems and Multiple Talking Systems of telephones for all kinds of establishments, from the most simple to those working on exchange trunks and central stations. 22 pp. Ill. 8¼ x 10 in.

Stromberg-Carlson Telephone Mfg. Co., Rochester, New York.

304. *Inter-Communicating Telephone Systems. Bulletin No.* 1017. A pamphlet giving just the information required for the installation of intercommunicating systems from 2 to 32 stations capacity. 15 pp. Ill. 7¾ x 10 in.

TERRA COTTA

Atlantic Terra Cotta Company, 350 Madison Ave., New York, N. Y.

425. *Questions Answered.* A brief but full description of Atlantic Terra Cotta and its use in buildings. 32 pp. Ill. 5½ x 7 in.

426. *Booklets on Buildings.* A series of booklets describing terra cotta work for buildings of different kinds. In applying, mention size, type and purpose of building for which data is wanted.

National Terra Cotta Society, One Madison Ave., New York, N. Y.

157. *Terra Cotta Defined. Brochure Series, Vol. VI.* Illustrated brochure with photographic illustrations of architectural terra cotta, details of terra cotta ornament in office-buildings, theatre, bank, school, store, and public building. Its adaptability and lasting qualities are given and the process of manufacture and history is briefly outlined. Size 8½ x 11 in. 32 pp.

445 *Present Day Schools. .Brochure Series. Vol. I.* The use of terra cotta for schools is exemplified in the presentation of 42 schools in the East, the Middle West and Far West, together with a discussion of "Some General Points on School Buildings" by James O. Betelle, A. I. A. 32 pp. Ill. 8½ x 11 in.

446. *Better Banks. Brochure Series. Vol. IV.* Illustrations are given of handsome appearing banks in many states, showing the application of terra cotta, with an article on "Terra Cotta for Banks" by Alfred C. Bossom, architect. 32 pp. Ill. 8½ x 11 in.

The Northwestern Terra Cotta Co., 2525 Clybourn Ave., Chicago, Ill.

96 *Architectural Terra Cotta.* A collected set of advertisements in a book, giving examples of architectural terra cotta, ornamental designs and illustrations of examples of facades, of moving picture houses, office buildings, shops, vestibules and corridors in which Northwestern Terra Cotta was used. Size 8½ x 11 in. 78 pp.

TILE—Ornamental

The Associated Tile Manufacturers, Beaver Falls, Pa.

259. *Basic Information on Tiles.* Book giving practical information on ingredients, processes, gradings, sizes, shapes, colors, finishes and nomenclature. Sent to architects on request. 7½ x 10⅝ in.

358. *Home Suggestions.* A new book in colors describing and illustrating the use of tiles in floors, walls, ceilings, fireplaces, garages, for exterior embellishment, etc. Full of suggestions. Sent to architects on request. 7½ x 10⅝ in.

374. *Basic Specifications for Tilework and Related Documents. No. K-300.* This specification is prepared in a very systematic manner for the use of architects and builders. It is printed on one side of a sheet with facing page blank to receive memoranda. Various colored sheets make reference easy and simplify greatly the work of a specification writer in specifying tilework. 38 pp. 7½ x 10⅝ in.

The Associated Tile Manufacturers, Beaver Falls, Pa.

375. *"Work Sheets" for Specification Writers.* To be used in connection with "Basic Specification for Tilework and Related Documents." 16 sheets 7½ x 10⅝ in.

TIME CLOCKS—See Clocks

TREADS, SAFETY

American Abrasive Metals Co., 50 Church St., New York, N. Y.

383. *A New Safety Tread.* A folder announcing the perfecting of a process whereby aluminum is used as the abrasive-holding base, or matrix, in a new safety tread for locations where this detail may be ornamental. Ill. 8½ x 11 in.

TRIM—See also Doors and Windows

TRUSSES—See Building Construction

VACUUM CLEANERS

Landers, Frary & Clark, Connersville, Ind.

299. *General Catalogue.* This book describes and illustrates Connersville vacuum cleaners, stationary and portable, dry and centrifugal separating units, sizes of machines, uses and typical installations. 24 pp. Ill. 5¾ x 9 in.

VARNISH—See Paints

VAULT LIGHTS

American Three Way Luxfer Prism Co., 13th Street and 55th Court, Chicago, Ill.

424. *Daylighting. Catalog* 21. A complete catalog on glass prisms for use in transoms, sidewalk and floor lights, skylights, etc., for lighting places inaccessible to direct daylight. Contains also measurements, specifications and other data required by designers. 42 pp. Ill. 8½ x 11 in.

VENTILATORS

The Burt Manufacturing Co., Akron, Ohio.

207. *General Catalogue* covering entire line of Ventilators, Exhaust Heads and Filters. Separate leaflets on each type of ventilator, vent and damper.

Walter B. Gilbert & Co., York, Pa.

F485. *The Pullman Ventilating System.* A circular describing a system of natural ventilation and window ventilator units. 24 pp. Ill. 6 x 9 in.

Globe Ventilator Company, 205 River St., Troy, N. Y.

250. *"Globe" Ventilators.* A catalog giving dimensions, gauges of material, capacities and list prices of "Globe" ventilators, also illustrating many different classes of buildings on which "Globe" ventilators are installed. 32 pp. Ill. 6 x 9 in.

VENTILATION—See Heating and Ventilation

WALL COVERING

Standard Textile Products Co., 320 Broadway, New York, N. Y.

111. *Sanitas, Modern Wall Covering.* Folio. Plates of color renderings of various interiors, with suggestions for the library, living room, dining room, boudoir, kitchen and church wall covering, using Sanitas. Size 11½ x 6 in. 15 plates.

112. *Sanitas and Its Uses.* Booklet. Text and color illustrations of Sanitas as a wall covering, with tables for wall and ceiling measurements. Notes on sanitary character, cleanliness and durability of Sanitas. Size 5 x 7 in. 28 pp. 6 color plates and 2 sample sheets.

Standard Textile Products Co., 320 Broadway, New York, N. Y.

113. *Sanalining Sanitas Lining and Prepared Lining.* Folder. Notes on durability and cleanly character of the above three products. Size 3¾ x 6 in.

114. *Hints to Decorators.* Booklet. Instructions and specifications for the application of Sanitas, with notes on finishes and material. Size 5 x 6¾ in. 20 pp.

WATER HEATERS

Humphrey Co., Kalamazoo, Mich.

50. *Humphrey Gas Water Heaters.* Catalog and handbook. Diagrams, tables and complete data for specifying gas water heaters of all types and sizes. Size 6 x 9 in. 36 pp.

WATERPROOFING—See also Dampproofing

Anti-Hydro Waterproofing Co., Newark, N. J.

F447. *Specifications for the Hansling System.* A set of 5 specifications for waterproofing brick masonry; all masonry; concrete and mortar; hardening concrete floors; waterproofing stucco. 8½ x 11 in.

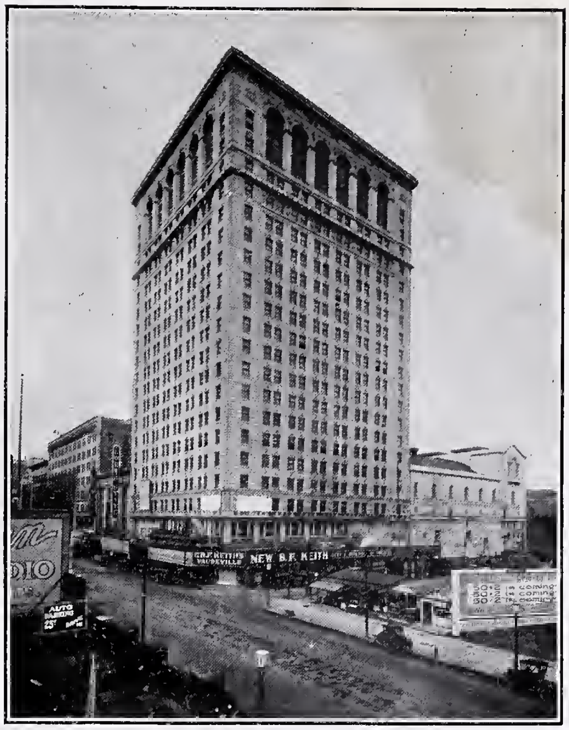
A. C. Horn Company, Horn Building, Long Island City, N. Y.

301. *Architect's Set.* A file folder, ready labelled for inclusion in the files, containing a full set of literature on all Horn Waterproofings, Dampproofing and Technical Paints. Descriptive Chart giving covering capacities, etc., printed on inside of folder.

The Vitrifyx Company, 2526-34 W. Congress Street, Chicago, Ill.

F496. *Waterproof Concrete.* A description of Hydrolithic together with specifications for using it in waterproofing concrete. Contains also a list of buildings in which this material has been used. 32 pp. Ill. 8½ x 11 in.

Rapid Construction



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"OUR innate modesty forbids our making any mention of the speed which we made in completing the Terra Cotta on the above building. However, we feel we can say that this job was enclosed more rapidly than any other building of a similar type which has been erected in Cleveland. It goes without saying that no progress of this kind could have been made had we not had your co-operation and your rapid delivery of materials. The manner in which you handled the work was highly satisfactory and we are all very much pleased with the results.

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The Lundoff-Bicknell Co."

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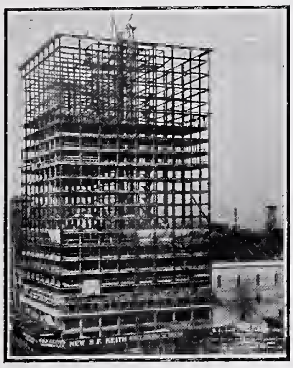
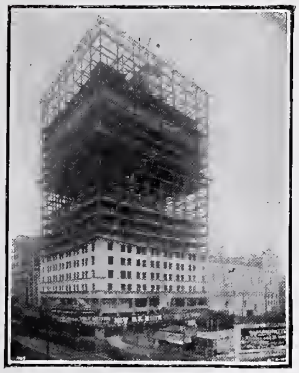
Atlantic Terra Cotta Company

350 Madison Ave., New York

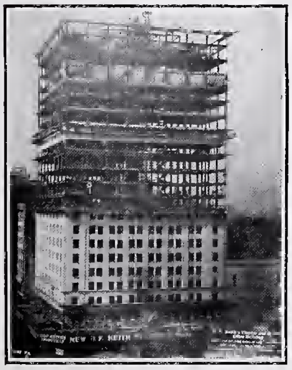
Southern Factory
Atlanta Terra Cotta Company
Atlanta, Georgia



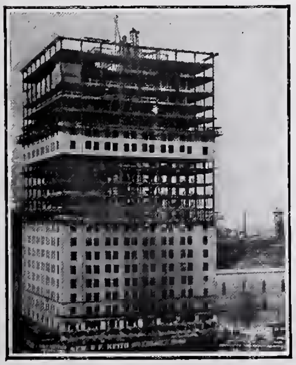
October 1.



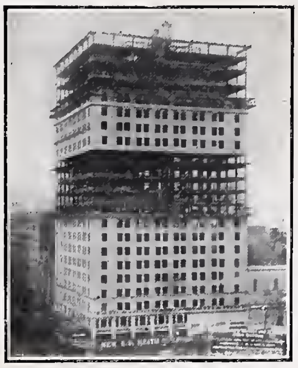
October 8.



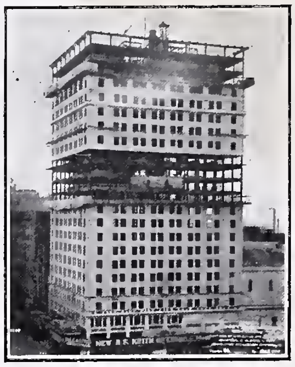
October 15.



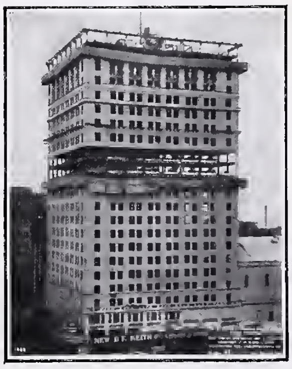
October 22.



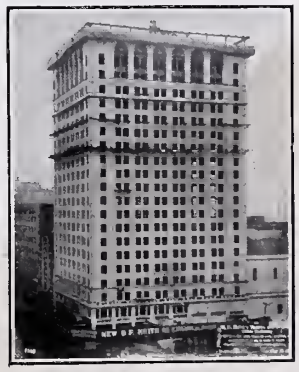
October 29.



November 5.



November 12.



November 19.

REFERENCE LIST OF BUSINESS LITERATURE—Continued

WATERPROOFING—See also Dampproofing

Minwax Company, Inc., 18 East 41st St., New York, N. Y.

327. *Sub-level Waterproofing. Bulletin* 21. Contains a discussion of waterproofing methods as applied to sub-level and bridge deck work. Information is given on the MINWAX System with specifications. 24 pp. Ill. 8½ x 11 in.

328. *Waterproofing Exposed Walls.* Discussion of wall protection methods. Full information on MINWAX Clear Waterproofing; Minwax Brick and Cement Coating; MINWAX No. 300 Dampproofing. 12 pp. 8½ x 11 in.

The Truscon Laboratories, 1632 Caniff St., Detroit, Mich.

238. *Architects' Specification Hand Book.* This book contains 32 sheets bound in tough paper loose-leaf binder. The specifications cover the waterproofing of concrete, plaster and stucco; the dampproofing of surfaces of cement, concrete, brick and stone; the oil proofing of concrete; the use of paint and enamel on all surfaces; the application of metallic and chemical floor hardeners; the use of protective steel coatings and architectural varnishes. 8½ x 11 in.

239. *Dampproofing.* Booklet giving specifications on black dampproofings, including Plaster Bond (dampproofing for interiors). Foundation Coat (dampproofing under each filling) and Stone Backing (dampproofing unexposed sides of cut stone). 12 pp. Ill. 5¼ x 7¼ in.

Wadsworth Howland & Co., Inc., Boston, Mass.

306. *Bay State Waterproofings.* Contains descriptions of and specifications for use of brick and cement coating, crack filler, below grade waterproofing, steel protective coating, cement floor filler and coating, clear waterproofing. 16 pp. Ill. 8 x 10½ in.

WATER PURIFICATION

United States Ozone Co., Scottdale, Pa.

245. *Bulletin* 37. *Ozone Water Sterilizers.* Contains description of principles and mechanical design, results obtained and specifications covering construction. Complete outline of operation. Capacities from 100 to 1,000 gallons per hour.

246. *Bulletin* 39. *Swimming Pools.* Description and application of Ozone apparatus to Swimming Pools. This Bulletin completely covers the purification of swimming pool water and gives unique designs of swimming pool circulating systems.

WATER SOFTENERS

The Permutit Company, 440 Fourth Ave., New York.

105. *Permutit (Water Rectification Systems.)* Illustrated booklet. Describes all methods of softening water, including the original Zeolite process. For homes, hotels, apartment houses, swimming pools, laundries and industrial plants. Size 8½ x 11 in. 32 pp.

Wayne Tank and Pump Company, Fort Wayne, Ind.

482. *Bulletin No.* 1600. This bulletin treats of the value of soft water in the house and describes the Wayne Domestic Water Softening System. 6 pp. Ill. 8¼ x 10½ in.

WATER SUPPLY—See Pumps

WEATHER STRIPS

Chamberlin Metal Weather Strip Co., 107 Third Ave., Detroit, Mich.

F432. *Twenty-seven Years of Metal Weather Strips.* A practical treatise on various types of metal weather strips. Contains valuable tables and reports on tests by well-known testing engineers. 20 pp. Ill. 4 x 9 in.

The Higgin Manufacturing Co., 5th and Washington Ave., Newport, Ky.

354. *Higgin All Metal Weather Strips.* A booklet of considerable value to architects and builders on the use of weather strips. Ask also for the companion book on "The Reason Why." Each booklet 12 pp. Ill. 6 x 9 in.

WINDOWS—See Doors and Windows

Standard Comfort Window Corporation, 426 Broome St., New York, N. Y.

405. A book describing a combination sliding and swinging sash which may be applied to new and old double hung windows, draft-free ventilation; maximum comfort; weather tight; takes all danger out of window washing. 12 pp. Ill. 6 x 9 in.

WOODWORK

Hartmann-Sanders Company, 6 East 39th St., New York, N. Y.

334. *Catalog No.* 47. Illustrating Koll's Patent Lock Joint wood stave columns for exterior and interior use. 48 pp. Ill. 7½ x 10 in.

High School, 36,000 feet, Floors, Wainscot and Stair Treads

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HYGIENIC, DURABLE

FIREPROOF

Floors are the most used and abused portion of every building and demand that only the best flooring material be specified.

ASBESTONE Composition Flooring is the ideal flooring for all interior purposes. It is recognized to be the most perfect medium-priced flooring that is installed plastic, presents a monolithic surface, smooth, jointless and artistic, is easy to keep clean, practically noiseless, resilient and easy to the tread.

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Carey

BUILT-UP ROOFING

—used on the world's largest single unit automobile body plant

THE Fisher Body Ohio Company plant in Cleveland is the largest, finest and most efficient institution of its kind in the world.

Such a plant deserves the best roof obtainable.

Carey Feltex built-up roofing was used because it is the best *type* of roofing for the purpose and because it is the best make of roofing of this type.

Ask us to furnish the facts and figures on which these broad statements are based.

THE PHILIP CAREY COMPANY
505-525 Wayne Ave., Lockland, Cincinnati, Ohio

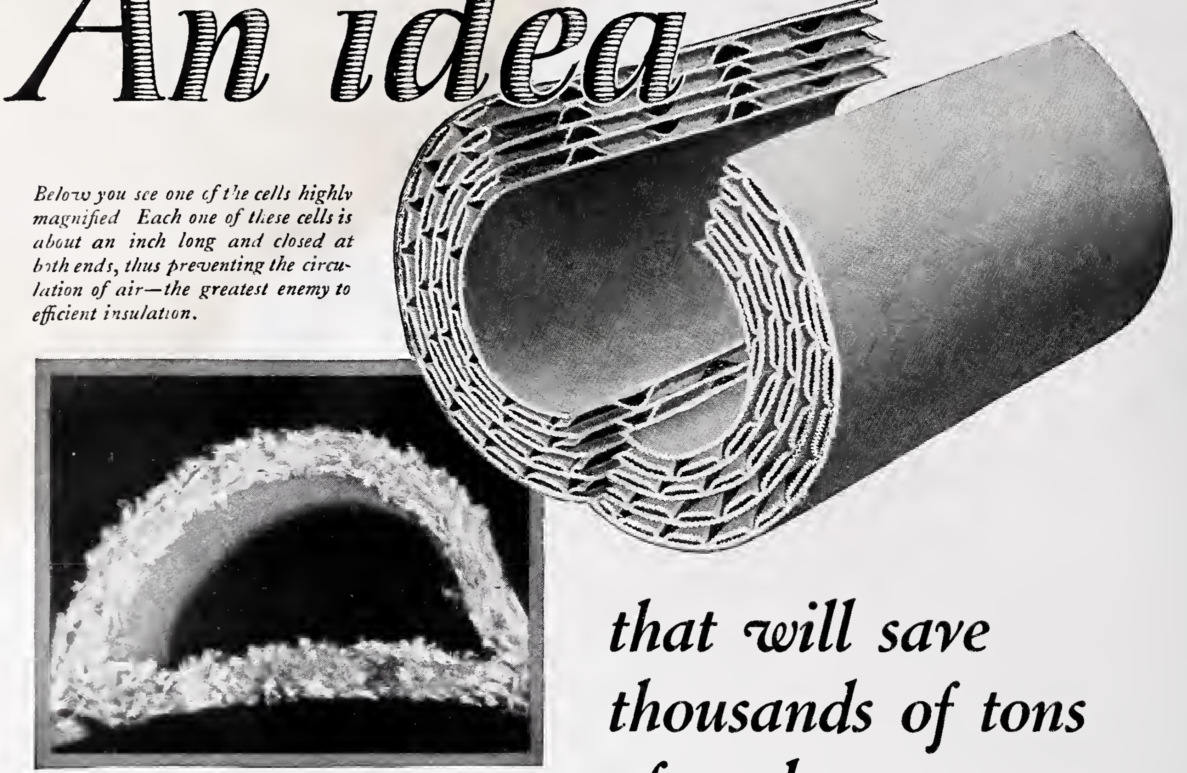
SEE OUR CATALOGUE IN SWEETS

The Fisher Body Plant Cleveland

Albert Kahn, Detroit; Architect. Thompson-Starrett Co., Cleveland; Contractors

13 22

An idea



Below you see one of the cells highly magnified Each one of these cells is about an inch long and closed at both ends, thus preventing the circulation of air—the greatest enemy to efficient insulation.

that will save thousands of tons of coal

UP until now one fault of corrugated insulation has kept it from being completely efficient—namely, air circulating lengthwise along the corrugations.

These long corridors of circulating air have reduced the heat-saving properties of pipe insulation.

But here is an insulation that is *truly cellular*—Johns-Manville Improved Asbestocel. Note how the lengthwise corrugations are crossed by corrugations going around the pipe—forming a series of dead air-cells.

This means a maximum of heat-saving. Yet Johns-Manville Improved Asbestocel is sold at about the price of ordinary air-cell pipe covering.

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Improved Asbestocel

"Chipmunk Cottage"
The Manor, Asheville,
N. C., R. S. Smith,
Architect.

Inside—looking out.

This modern window is opened and closed by turning a small control lever; the operation does not interfere with screens or draperies.

Simple in design

This type of window is made possible by Carrier's Quadrant Adjuster (C. Q. A. Hardware). for use in residences, schools, hospitals, and public buildings where maximum ventilation, convenience and artistic effect are desirable. The Adjuster automatically locks the window in any position and eliminates any possibility of rattling or sagging No fasteners or hinges to add to the cost. Both sides of window easily cleaned from within the room.

Sweet's and Architects' Samples Corporation, New York.

C Q A
Simple in design

Ask us to send you our Descriptive Architectural Leaflet.

CARRIER ADJUSTER COMPANY
Casement Window Hardware
Asheville, North Carolina

HIGGIN ALL METAL WINDOW SCREENS

Residence of Hon. Charles Nagel, St. Louis, Mo., Secretary of the Interior, Taft Administration. La Beaume & Kline, architects. Higgin Screens and Weatherstrips throughout.

Save Heating Costs and Increase Comfort

Higgin All-Metal Weatherstrips are a complete and perfected equipment for making doors and windows absolutely tight against ingress of cold drafts or egress of furnace heat.

Heating engineers recognize that Higgin All-Metal Weatherstrips make possible a 20% reduction in radiation—a saving of much more than the cost of a Higgin installation.

Every home should be Higgin equipped for comfort and economy of heating.

Higgin service men and fitters, Higgin-trained specialists, estimate and install Higgin Weatherstripping according to your specifications.

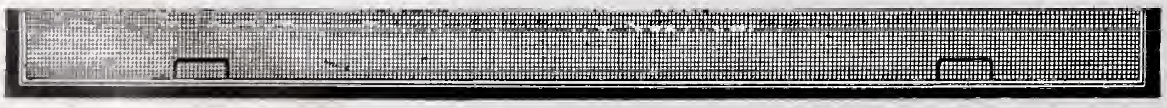
Call your local Higgin service office or write the home office for information.

SEE OUR CATALOGUE IN SWEET'S

The HIGGIN Mfg. Co.
Newport, Ky.
Toronto, Canada.

Service offices in al principal cities in the United States and Canada.

Look in your telephone or city directory for the address of your local Higgin service office.



The PERFECT BATHROOM

BUILT-IN china bathroom accessories not only add greatly to the convenience of a modern bathroom but provide a distinctive note of refinement.

Fairfacts Fixtures are now used in many of the finest residences, hospitals, apartment buildings, and hotels in America.

Write for descriptive booklet.

Architects' Service Department

WE ARE glad to co-operate with architects in furnishing construction details as well as in suggesting the most convenient arrangement for installing built-in bathroom accessories.

Fairfacts Fixtures are sold through the tile contractors and installed by them, and not by the plumbing trade.

We are originators and patentees of this type of bathroom accessories and have the largest facilities.

THE FAIRFACTS COMPANY, *Inc.*

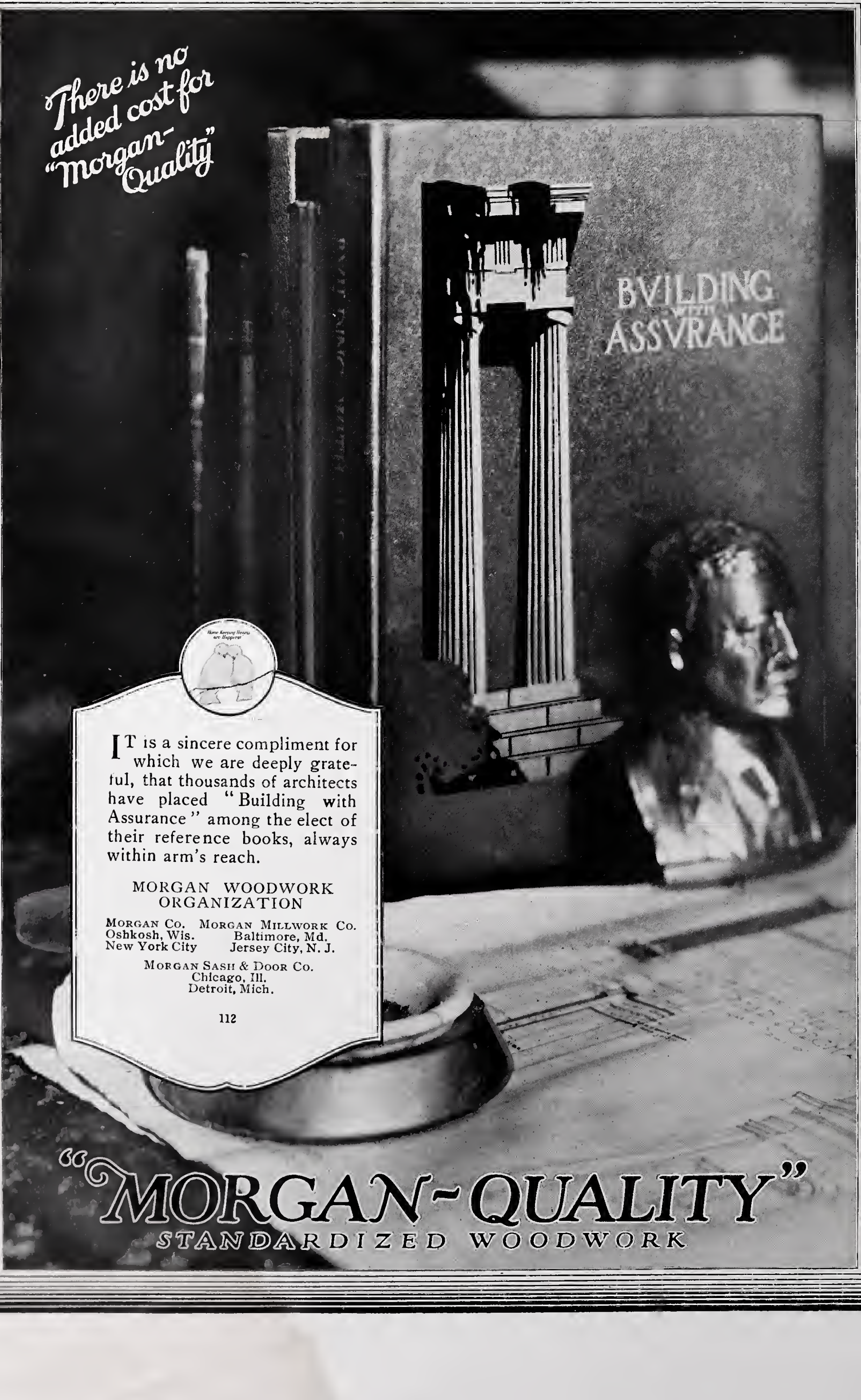
Manufacturers

234 West 14th Street New York City

Fairfacts Fixtures

BUILT IN YOUR BATHROOM WALLS

FC 3789


There is no added cost for "Morgan-Quality"
BUILDING WITH ASSURANCE
Home Keeping Hearts are Happiest

IT is a sincere compliment for which we are deeply grateful, that thousands of architects have placed "Building with Assurance" among the elect of their reference books, always within arm's reach.

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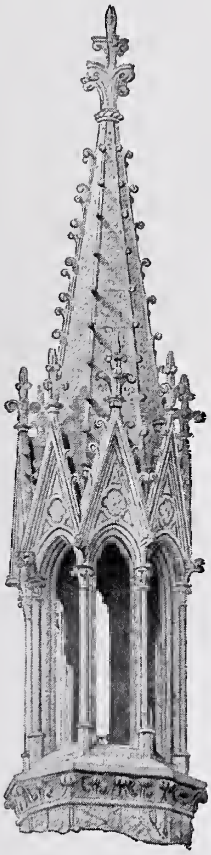
"MORGAN-QUALITY"
STANDARDIZED WOODWORK



Showing the possibilities of rendering apparently delicate and intricate details in granite at costs which are not excessive.

Detail of Pinnacle of Cathedral of the Sacred Heart, Newark, N. J.

I. E. Ditmars, Architect.

"The Noblest of Building Stone."

A Service That Is Maintained To Co-operate With Those Who Want Information About Granite

SO that you may become better acquainted with the architectural possibilities that lie in the use of granite, The National Building Granite Quarries Association maintains an office in Boston.

Here it correlates and dispenses information obtained from the entire industry, helps you secure competitive bids from its fifteen members and co-operates with all who are interested in granite.

This service is at your disposal.

Each month on this page will be shown some different phase of the preparation and use of granite in building construction.

Perhaps some of them may hold a thought that will prove useful to you.

In the meantime booklet No. 1 of the granite series, entitled "Architectural Granite," may be had for the asking.

Besides complete information about the specifying and detailing of granite, it shows in actual colors and texture the nineteen different granites quarried by Association members.

National Building Granite Quarries Association, Inc.

H. H. Sherman, *Secretary* 31 State Street, Boston, Mass.

GRANITE

The Value of Kellastone for Stuccoing Purposes

BRIQUETTE tests reveal the fact that KELLASTONE Stucco exceeds the strength requirements for Portland cement established by the American Society for Testing Materials, by more than three times.

This extraordinary strength, accompanied by a flexibility unequaled by any other plastic material, combine to make Kellastone products of real worth in the field of architecture and construction. Kellastone also ranks very high in resistance to fire.

When twenty-eight days old, KELLASTONE possesses an average breaking strength of 700 pounds per square inch. It stands to reason that the greater the strength of any stucco, the greater the strain the material will stand before parting or cracking. KELLASTONE will remain perfect under strains and conditions that would ruin ordinary stuccos.

For interiors, uncased openings, arches, pilasters, etc,. KELLASTONE Interior Plaster is especially effective. It is a highly fibrous plaster, weighing only half as much as lime or gypsum plasters, and equaling KELLASTONE Stucco in tensile strength. The volume change during and after setting is so low as to eliminate internal shrinkage stresses. Write for interesting KELLASTONE literature.

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ROOM 518
155 EAST SUPERIOR STREET
CHICAGO, ILLINOIS

New York Office
342 MADISON AVENUE
NEW YORK CITY

KELLASTONE
IMPERISHABLE STUCCO

We shall be glad to send you with our compliments, copies of our illustrated "Chippendale and Mahogany" and "Mahogany in Colonial Days," the first two folders in the Mahogany series.

Good Furniture Standards

AFTER numerous conferences with Furniture Retailers and Manufacturers, the Associated Advertising Clubs of the World has set up the following standards, by which Furniture Retailers should advertise and sell furniture to the public.

Solid Mahogany

Furniture designated as Solid Mahogany shall have all exposed surfaces of Solid Mahogany.

Mahogany

Furniture designated as Mahogany shall have all exposed surfaces (both solid parts and plywood) of Mahogany.

Combination Mahogany

Furniture designated as Combination Mahogany shall have all exposed surfaces of Mahogany (solid or plywood) in combination with Gum, Birch or other suitable wood.

The kind of wood used in combination with Mahogany shall be named. For example: "Combination Mahogany and Birch," or "Combination Mahogany and Gum."

Imitation Mahogany

Furniture designated as Imitation Mahogany shall be that with exposed surfaces of other woods *colored to imitate Mahogany.*

The term "exposed surfaces" shall mean those parts of a piece of furniture exposed to view when the piece is placed in the general accepted position for use in the home.

A Decision that will Affect Every Architect

THE United States Supreme Court has added another volume to the laws which protect the buying public.

In effect, the Court decrees that the Federal Trade Commission has the right to order any manufacturer to cease using any *label, brand* or *term* which might deceive the ultimate consumer, *although members of the trade are not misled thereby.*

This means that a better grade of furniture will be sold—and that Chippendale, Sheraton, Hepplewhite and Colonial—*the Mahogany styles*—will again be popular.

Already there is a trend toward the dignity and simplicity of Colonial interiors, proper settings for Genuine Mahogany furniture. Bear in mind that Genuine Mahogany trim is just as appropriate in the cottage and bungalow, as it is in the mansion.

The COST is very little, if any, more than any of the other cabinet woods.

When you next figure on interior trim, put in an alternative bid for Mahogany and write us for information.

MAHOGANY ASSOCIATION, INC.
St. James Building
1133 Broadway, New York City

After all—there's nothing like

MAHOGANY

— just off the press.

An intensely interesting story of just an ordinary little clam,—the most quiet and defenseless creature you can imagine,—yet, what a wonderful service he renders the Architect, Contractor and Owner.

From Maine to California,—even from Canada and Australia,—have come scores of requests for this book.

Those who have read it have been amazed. You, too, will enjoy reading it.

Your copy is ready. However, to avoid indiscriminate distribution, please make your request on your business stationery?

The Ohio Hydrate & Supply Co.,

Woodville, Ohio

Artistry and Character too, in Design Oak Floors!

Heretofore restricted by high cost to pretentious homes, they are now available to every purse through

BRUCE DESIGN Oak Flooring

Afforded by our newly developed quantity production method. Wide assortment of designs including squares, herringbone and basket weaves—all described in our new catalog. May we send you a copy?

Bruce Design Oak Flooring is obtainable locally through lumber dealers, contractors and floor layers

E. L. BRUCE COMPANY · *Manufacturers*

MEMPHIS · BRUCE · TENNESSEE

SARGENT
HARDWARE

Residence of Mr. Thos. J. Hare
Merion, Pa.

Mr. Frank Seeburger
Architect

Shown above is another example of refined residential architecture to which

SARGENT
LOCKS AND HARDWARE

contributed its distinctive but invariably harmonious note.

SARGENT & COMPANY
Manufacturers
NEW HAVEN, CONNECTICUT.

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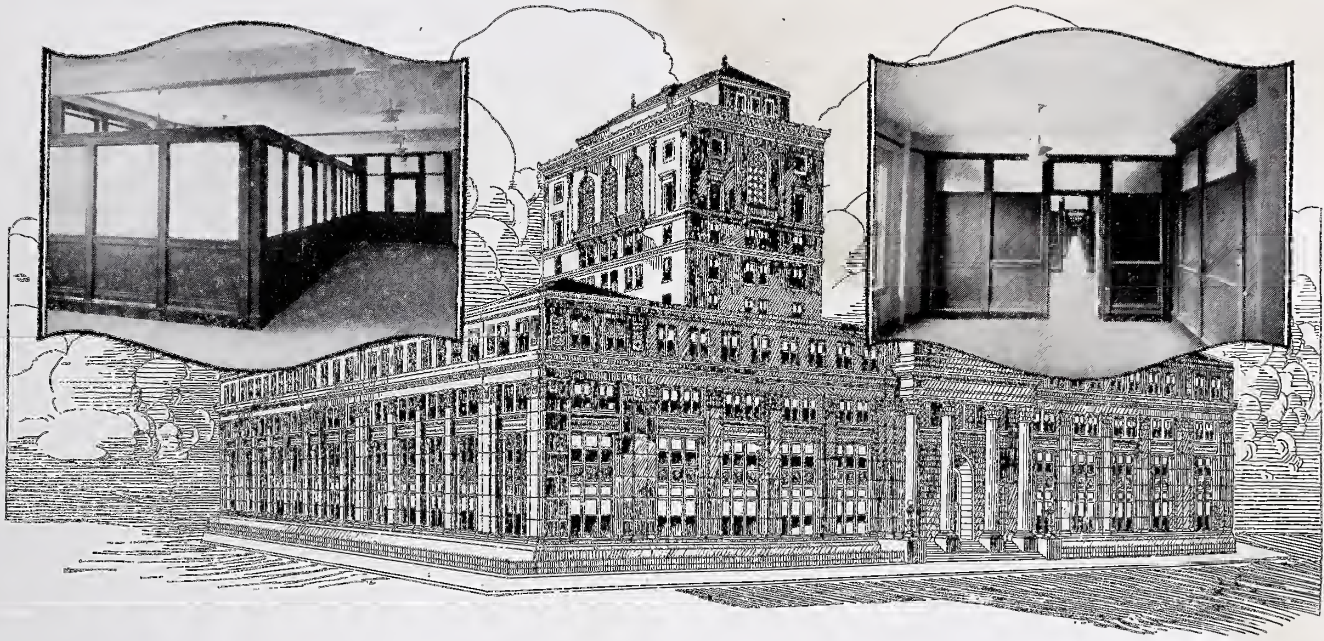
SARGENT HARDWARE IS SOLD IN ALL CITIES BY REPRESENTATIVE DEALERS



New Home Office of John Hancock Mutual Life Insurance Co., Boston.
Parker, Thomas & Rice—*Architects*

New John Hancock insurance building uses Art Metal doors and partitions

WHEN John Hancock Mutual Life Insurance Company planned its new headquarters building, no expense or architectural skill was spared in making it complete in every respect, both from the standpoint of beauty, utility and permanence.

It is, therefore, natural that Art Metal was chosen to supply the steel doors and partitions. This is the largest partition installation ever built.

Art Metal Architectural Hollow Metal Equipment covers every requirement—economy, long life, fire resistance, beauty of design and finish.

Art Metal service is at your disposal in planning and installing the interior hollow metal equipment for your clients.

Write us for full data, specifications and estimates on your door and hollow metal installations.

Art Metal
Jamestown, New York
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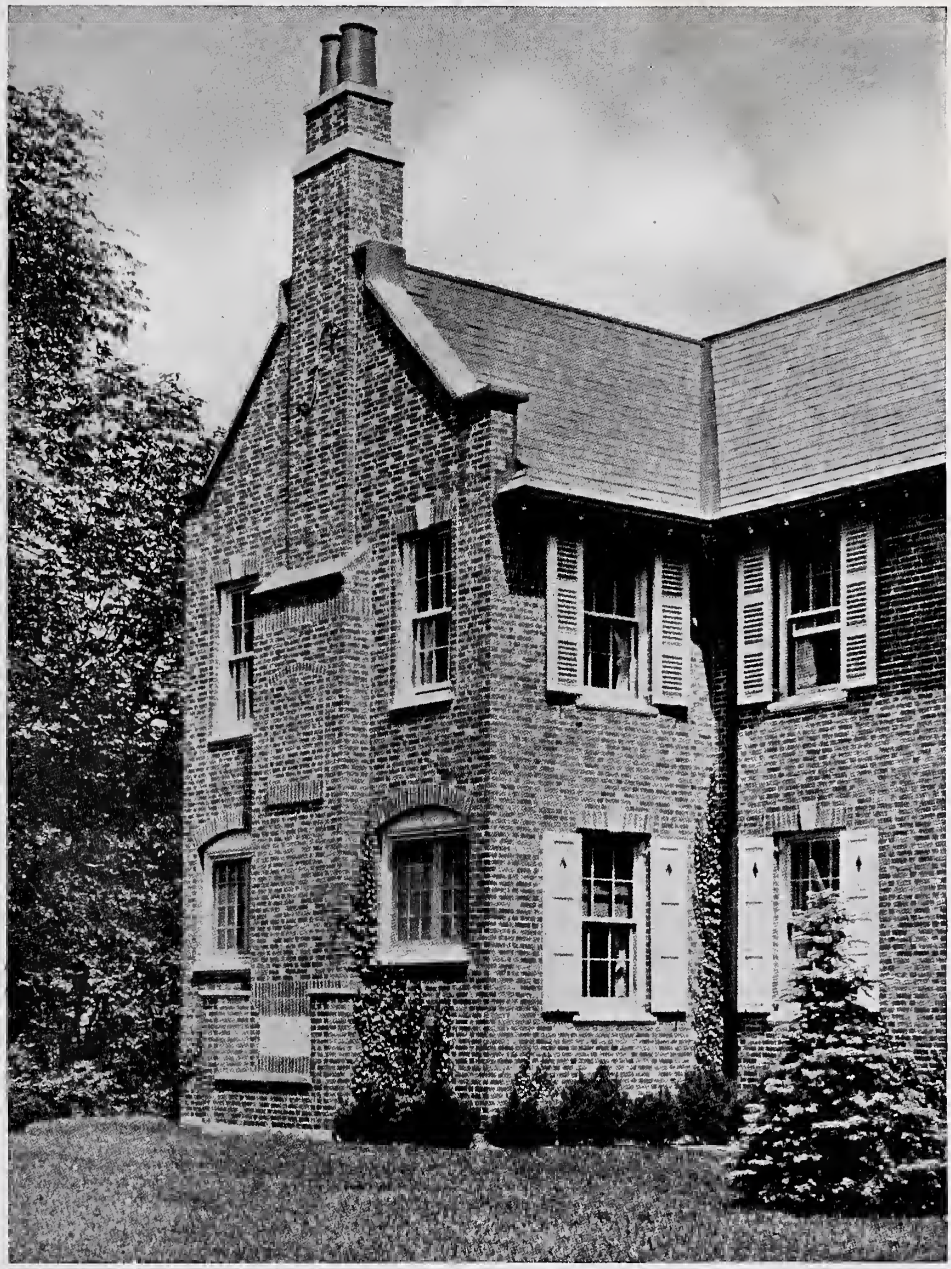
Art Metal
JAMESTOWN, NEW YORK

World's largest makers of steel interior equipment

MIDLAND TERRA COTTA

"We take more pains" in the application of the ceramic treatment of Terra Cotta, to insure perfection in our finished product, in keeping with the high standards throughout all departments.

MIDLAND TERRA COTTA COMPANY
Chamber of Commerce Building, Chicago



A·F·B·A
USE FACE BRICK
—it Pays

Gable of Residence, West Newton, Mass. Frank Chouteau Brown, Architect

The English type of house lends itself naturally to the genius of brick. The architect here has made the chimney breast the motive of a treatment in brick at once distinctive and beautiful.

Distinctive Treatments of Face Brick Walls

INTERESTING and attractive effects in the Face Brick wall are not necessarily dependent on special forms and sizes. An almost infinite variety of distinctive treatments is possible by the use of standard sized Face Brick—and thus secured at the greatest economy.

More than a hundred examples of fine brickwork in standard sized Face Brick are shown in the portfolio of "Architectural Details in Brickwork." Many architects have expressed themselves as delighted with the beauty of the plates and their richness in suggestions.

A set of these plates, in three folders with printed tabs ready for filing, will be sent to any architect requesting them on his office stationery.

AMERICAN FACE BRICK ASSOCIATION
1754 PEOPLES LIFE BUILDING · CHICAGO, ILLINOIS

OTIS

For more than a half century

The World's Word

For Elevator Safety

OTIS ELEVATOR COMPANY

Offices in all principal cities of the world

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MADE IN U.S.A.
DIXON'S "ELDORADO"-the master drawing pencil-3B

THE responsiveness of a pencil emphasizes its value as a medium. Even in the most rapid sketch, DIXON'S ELDORADO runs the gamut from black to gray—no matter how delicate the line or subject.

DIXON'S ELDORADO

"the master drawing pencil"

Joseph Dixon Crucible Company, Pencil Dept. 14-J, Jersey City, N. J.
Canadian Distributors: A. R. MacDougall & Co., Ltd., Toronto

SAMPLE OFFER

Write for full-length free samples of *"The master drawing pencil"* and of Dixon's "BEST" Colored Pencils. In their field, the "BEST" Colored Pencils hold the same position of supremacy as Dixon's Eldorado.

*The
Bidet
Fixture*

The Thomas Maddock trade-mark on vitreous china plumbing fixtures means that the high quality of ware is GUARANTEED by the founders of the industry.

The Bidet fixture shown above is the result of twenty years' experience in the manufacture of this type of fixture. Made entirely of vitreous china and equipped with hot and cold water both to flushing rim and to douche, this fixture represents the highest type of Bidet construction yet achieved.

MADDOCK

THOMAS MADDOCK'S SONS CO., TRENTON, N.J., U.S.A.

4 Points to Consider When You Use Reinforcing Bars

1 BOND VALUE: In this there is a difference between reinforcing bars. It is important to remember that the deformations or lugs of Ceco Reinforcing Bars are placed at right angles to the axis of the bar, and are of a size and spacing to give maximum bond resistance.

2 QUALITY OF STEEL: Here again there is a difference between bars. We guarantee the quality and grade of our bars by having them inspected and tested by a recognized inspecting and testing laboratory. Only bars conforming to the specifications of the American Society for Testing Materials are passed for shipment on your order.

3 ENGINEERING SERVICE: Are you using too much or too little steel? We furnish recommendations as to economical design, preliminary estimates of cost, etc., without obligation. Our Engineering Department in all offices prepares shop drawings promptly and accurately.

4 FABRICATION AND DELIVERY: Are your bars being accurately fabricated and shipped promptly? They are if you use Ceco bars, for our several plants are completely equipped with power driven fabricating facilities, eliminating delays, and inaccurate work. And our complete line of bars, spirals, bar spacers, triangle mesh, etc., assures you "what you want when you want it."

REMEMBER bond value, quality of steel, engineering service and fabrication and delivery, when you use reinforcing bars.

Wieboldt Dept. Store Addition, Chicago. Berlin, Swern & Randall, Architects. R. C. Wieboldt & Co., Contractors.

Our power benders assure you accurate and prompt fabrication.

Frost National Bank Bldg, San Antonio. Sanguinette & Staats, Architects. J. P. Haynes, Contractors.

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QUALITY GUARANTEED Ceco BARS TESTED & INSPECTED

Do you give the servant-problem careful thought when designing the home?

One easy turn of the Lorain Red Wheel gives the housewife a choice of 44 measured and controlled oven heats for any kind of oven cooking or baking

YOUR better clients will always appreciate whatever you do to help them simplify the servant-problem. Therefore, specify Lorain-equipped Gas Ranges wherever gas is available.

The Lorain Oven Heat Regulator is of equal benefit to the woman who employs servants, to the servant, and to the housewife who does practically all her own work. Lorain is praised by servants wherever used by them. It enables the cook to prepare every favorite dish (soups, meats, vegetables and desserts) in a manner to please exactly the tastes of the family.

Because Lorain regulates and controls the heat of the oven automatically, it enables the servant to perform other tasks while the cooking or baking takes care of itself.

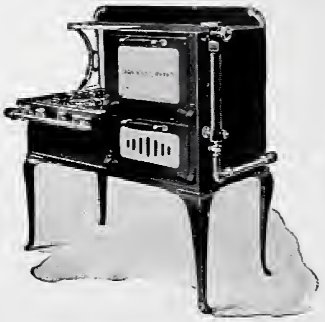
Whole-meal Cooking is another feature made possible by the Lorain Oven Heat Regulator. This is accomplished in the oven, over a long period of time, and requires no attention until the cooking process is completed.

Thus, the servant or housewife can place an entire meal in the oven at noon, absent herself from the house until dinner time, and, within a few minutes after her return, place a deliciously cooked dinner upon the table.

Lorain helps the housewife, who employs servants, to perform herself the additional labor of cooking when the servant is absent—with a minimum expenditure of time and effort, and with the most satisfactory results.

There are sizes, styles and finishes of Lorain-equiped Gas Ranges to meet every requirement. These wonderful gas stoves are being used in the largest and best schools and universities for the teaching of cookery. They are found in the finest of homes and apartments.

Wherever gas is used there are dealers who will be glad to demonstrate the Lorain Oven Heat Regulator to you or to your client. We'll be glad to send you complete catalogs giving dimensions, etc., also price lists and any other information you may need.



The Lorain Oven Heat Regulator is the first perfect application of the thermostatic principle of heat-control to the oven of the domestic gas range. It is sold only as an integral part of the gas ranges manufactured by the several divisions of American Stove Company listed below.

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DANGLER—
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National Stove Co. Div., Lorain, Ohio

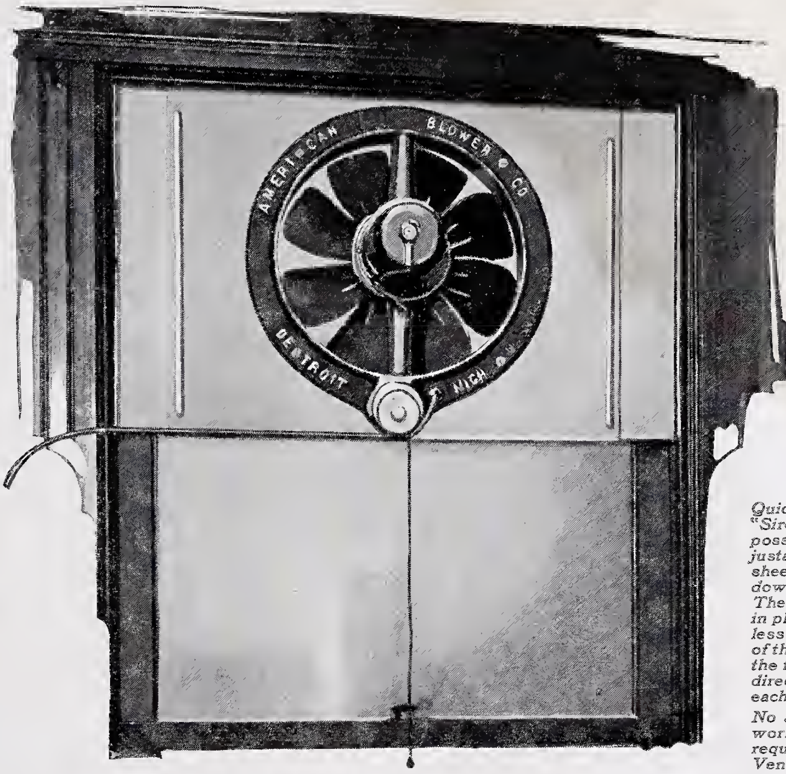
NEW PROCESS—
New Process Stove Co. Div., Cleveland, O.

QUICK MEAL—
Quick Meal Stove Co. Div., St. Louis, Mo.

RELIABLE—
Reliable Stove Co. Div., Cleveland, Ohio

LORAIN
OVEN HEAT REGULATOR

AMERICAN STOVE COMPANY
Largest makers of Gas Ranges in the World
197 Chouteau Ave. ST. LOUIS, MO



Quick installation of the "Sirocco" Ventura Fan is made possible by the "Sirocco" Adjustable Fan Frame—built of sheet metal and which fits windows 24 to 34 inches wide. The frame holds the fan firmly in place and can be installed in less than a half hour. The man of the house can easily install the fan by simply following the directions which accompany each frame.

No alterations, no carpenter work, no electrical work are required to install the "Sirocco" Ventura Fan.

It can be quickly removed and installed in another window in the same house or another building.

When the fan is not in operation, the window can be closed. When the fan is running, the the window must be opened so that the stagnant air may be exhausted or the out-door atmosphere brought into the room.

Quick Installation of "Sirocco" Ventilating Fan is Now Possible

Kitchens Can Be As Comfortable
And Cool As Any Other Rooms

No longer is it necessary for house kitchens to become hot and stuffy.

Annoyances from odors of cooking foods, smoke, steam, and vapors can be quickly banished with the "Sirocco" Ventura Fan.

Easily and quickly installed in a window, transom or other opening, the "Sirocco" Ventura Fan will clear the kitchen of all disagreeable atmosphere—or bring in the fresh, outdoor air. The fan is reversed by simply pulling a cord.

May we not send you our booklet on kitchen ventilation which details how quick installation of the small fan is made possible with the "Sirocco" Adjustable Fan Frame?

AMERICAN BLOWER COMPANY, DETROIT
BRANCH OFFICES IN ALL PRINCIPAL CITIES
CANADIAN SIROCCO COMPANY, LIMITED, WINDSOR, ONTARIO
[112]

"Sirocco" Ventura Fans are built in nine sizes and supply practically all demands for kitchen, office, factory and other ventilating fans.

"Sirocco" Products
TRADE MARK

BLOWERS · EXHAUSTERS · VENTILATING FANS · AIR WASHERS · ENGINES

FOR HEATING, VENTILATING, DRYING, AIR CONDITIONING, MECHANICAL DRAFT

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Residence of
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Fresh Air Heating

The relation of pure air and adequate ventilation to healthful house-heating is usually overlooked.

Preparation must be made to confine the poisonous products of combustion within the heater. Every precaution should be taken to prevent the devitalizing of the air by overheating and provision made to remove the personal contamination to the atmosphere, or death by disease will take its usual winter toll.

THE FARQUAR SANITARY HEATING AND VENTILATING SYSTEM

by actually preserving the purity of the air in combination with proper ventilation makes the home atmosphere healthful and invigorating, very largely eliminating the "bad air diseases." Home heating should be made safe and healthful as well as comfortable and economical, yet thousands forget the danger of common "coal gas" or fire poison.

The FarQuar one-piece electrically welded steel fire-box, without seams or rivets, positively prevents Carbon Monoxide gas from entering the air circulation. The presence of this poisonous gas in the atmosphere, even in minutest quantities, is responsible for serious nervous disorders and their resultant break-downs.

Many other just as important and exclusive features are fully discussed in our special booklet which is free to Architects. You may also feel free to ask the co-operation of our Engineering Department in connection with any plans on which you may be working.

The Farquhar Furnace Company

107 FarQuar Bldg., Wilmington, Ohio

From the Owner's Point of View

"I am very well pleased with the FarQuar System. Personally, I prefer warm air heating with a constant supply of fresh air from the outside, rather than steam or hot water, neither of which furnish that constant supply of fresh air."

"The FarQuar Draft Control is an exceptionally valuable feature. It works automatically and constantly. There is nothing to get out of order. If I were building again, would install the FarQuar System."

(Name on request).

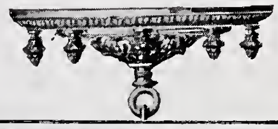
Exclusive "FARQUAR" Features and What They Mean

Electrically Welded One-Piece Steel Fire-Box Positively prevents contamination of air by gases or fire poisons.

Storage Fire-Box with large grate area insures slow combustion and fuel efficiency.

Vent and Return System. Provides a generous supply of gently warmed, pure, fresh air instead of a hot blast of super-heated air.

Automatic Regulator actuated by fire-box, completely controls fire, insuring uniform temperature regardless of weather, with surprisingly low fuel consumption.



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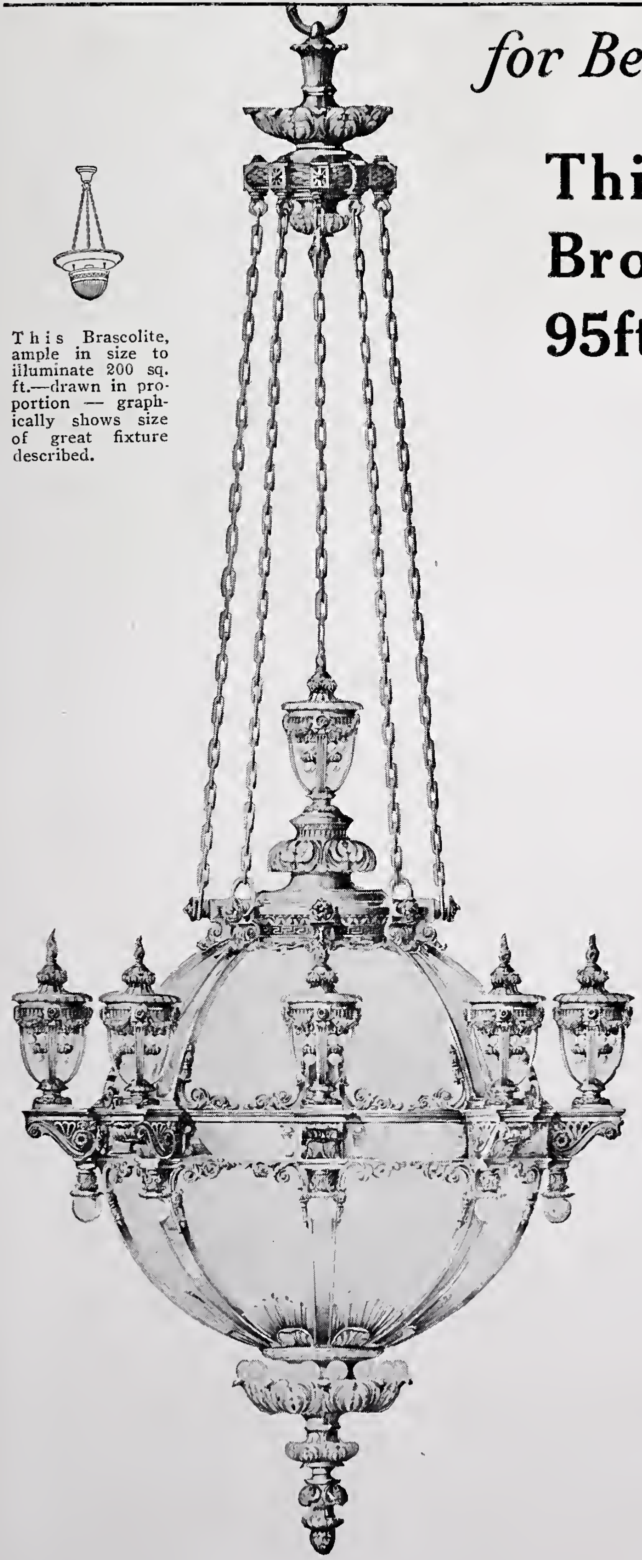
PATENTED AND TRADE MARK REGISTERED

for Better Illumination

This Brascolite, ample in size to illuminate 200 sq. ft.—drawn in proportion — graphically shows size of great fixture described.



This Great Monumental Bronze Lighting Fixture 95ft. long-14$\frac{1}{2}$ft. in diameter!

The largest lighting fixture ever made!

It is the major fixture for illuminating the great Rotunda Dome of Missouri's four million dollar Capitol at Jefferson City.

Length ninety-five feet; diameter, fourteen-and-a-half feet; Diameter of Body Ball, nine feet; Ceiling Plate, six feet, outside urns, two feet. Six thousand pounds of Government Specification bronze and fifteen hundred pounds of concealed structural iron were used in making it.

The fixture carries 133 lights for general illumination. Eight amber colored search lights, concealed in the upper structure, throw a golden sheen over the beautifully decorated ceiling of the great dome.

No illuminating problem is too great—or too small for Brascolite. Our Engineering and Designing departments are at your service, without obligation, at any time, for any special requirement.

We have recently prepared a series of architectural booklets—of standard size for filing —on Banks and Office buildings; Hospitals, Colleges and Y. M. C. A. buildings; and Commercial Service, copies of which we shall we glad to send upon request.

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ST. LOUIS, U. S. A.

Division of the St. Louis Brass Manufacturing Company

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SOLID COPPER
STORE FRONTS

ARCHITECTS find in Kawneer construction properly designed copper mouldings to fit every store front requirement. Whether for an imposing entrance for a large merchandise emporium or for the smaller shops, you will find just the right moulding in our wide assortment of stock and special members. This is one of the reasons why Kawneer Store Front construction has been specified and used in more than 150,000 of the most successful store fronts on the busiest streets of the nation.

Our new complete catalog gives full information and details about Kawneer construction. May we send a copy for your files?

THE
Kawneer
COMPANY
NILES, MICHIGAN

Magnolia Petroleum Company Building

American Exchange National Bank Building

INDIANA LIMESTONE

The New Skyline of Dallas

Mr. Alfred C. Bossom's drawing of the Dallas skyline shows that city's two largest structures—the American Exchange National Bank building, seventeen stories, and the magnificent twenty-eight story Magnolia Petroleum Company building, constructed of Indiana Limestone. Mr. Bossom was the architect for both projects.

It is a noteworthy fact that this fine, natural stone is used for the facing of a majority of the most successful modern commercial buildings.

Our Architects' Service Bureau is prepared to assist you with your Indiana Limestone problems.

Booklets will be mailed on request

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Box 765, Bedford, Indiana
Metropolitan Service Bureau, 622 Marbridge Bldg., New York City

Magnolia Petroleum Company Building

INDIANA LIMESTONE

THE NATION'S BUILDING STONE

DURASTONE BRAND

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TRAVERTINE INTERIOR
AND EXTERIOR FINISHES

KRIDER BUILDING MATERIAL CO., Inc.

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New York

Grand Street & Metropolitan Ave.
Brooklyn

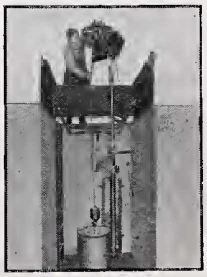
Operation of the G&G Electric Telescopic Hoist

Model E—With Complete Equipment, Including G&G Sidewalk Doors with Spring Guard Gates and Door Opening and Closing Device

View of hoistway. Sidewalk doors closed flush with pavement, automatically locked.

As hoisting head is raised sidewalk doors automatically open—alarm bell rings.

After ascending iron ladder, operator lowers cable and then hooks unaided—



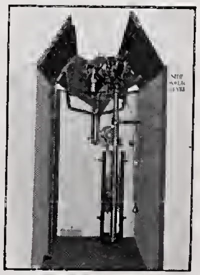
G&G Standard Hoisting Can with Swing Bail. Cable is non-rotating.

Operator raises electrically the filled can without leaving sidewalk.

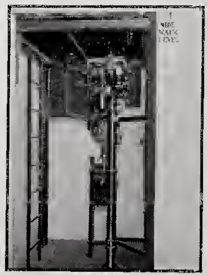
Swinging hoisting head (on ball-bearings) to deposit can on sidewalk. Can pushes gate open.

Filled can raised and deposited on sidewalk without lifting. Spring guard gate closes automatically.

Lowering by gravity empty can to cellar. No current used for lowering.



As hoisting head is lowered, doors automatically close—alarm bell rings.



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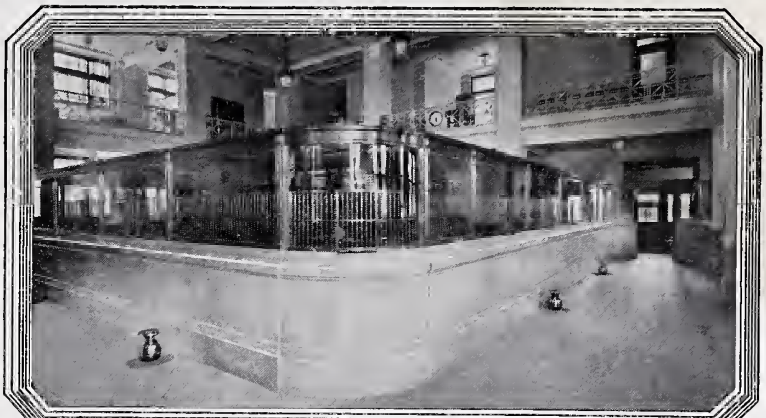

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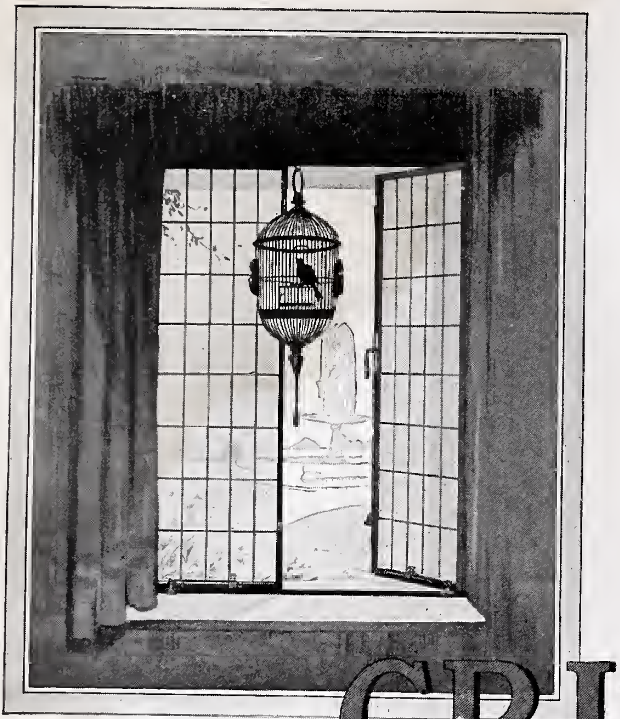

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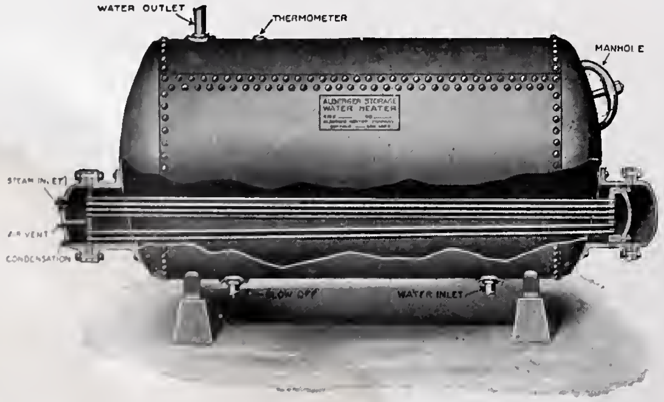

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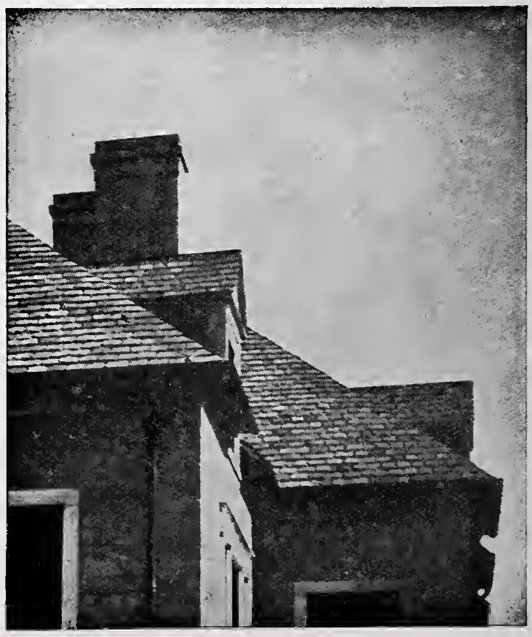

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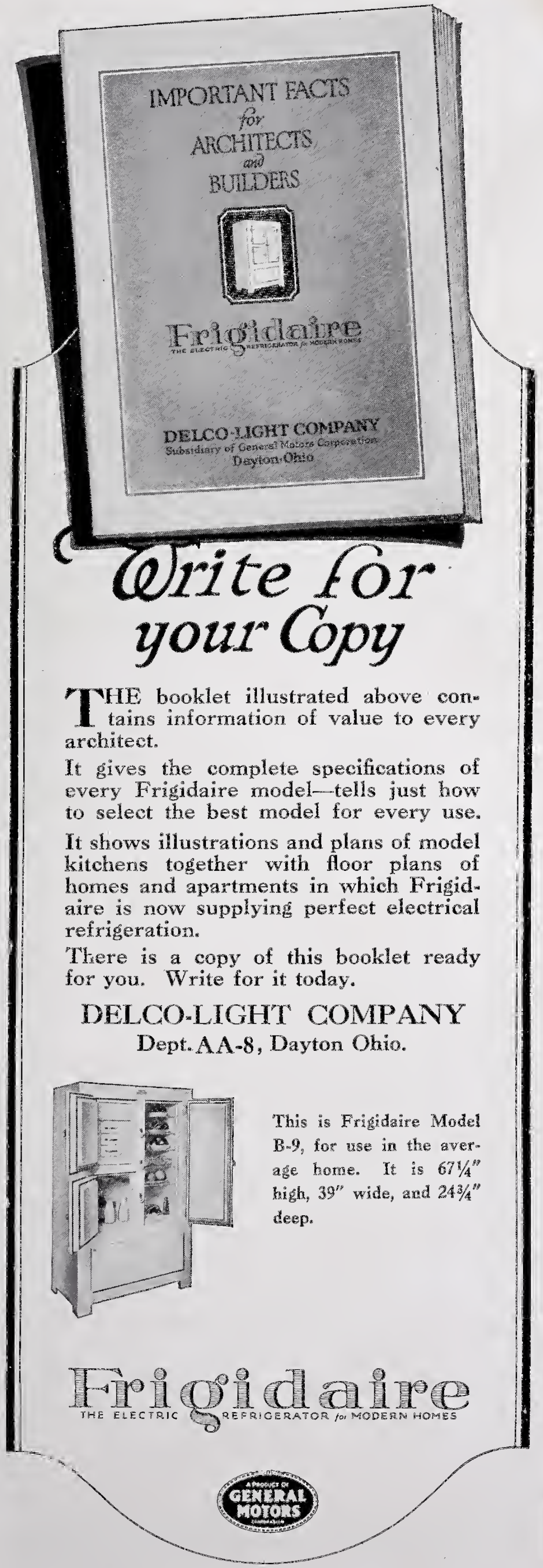
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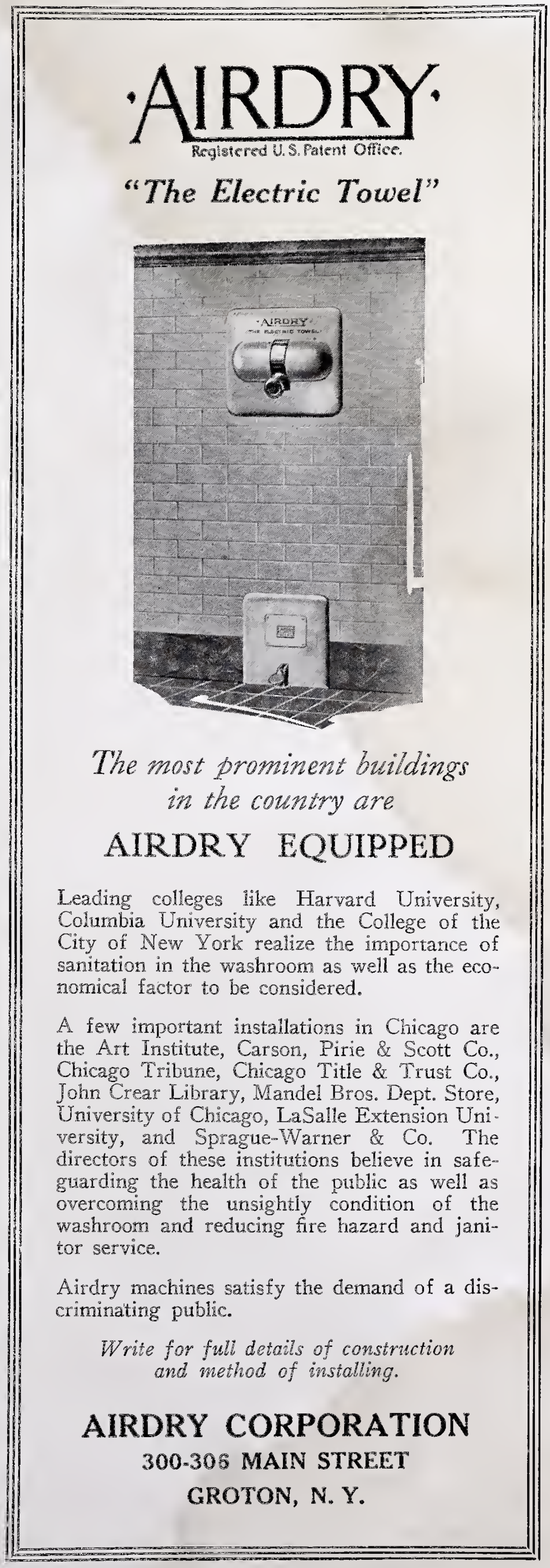

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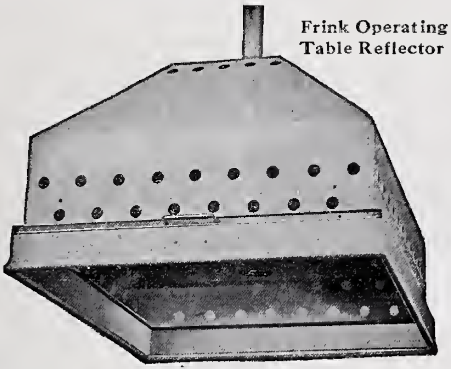

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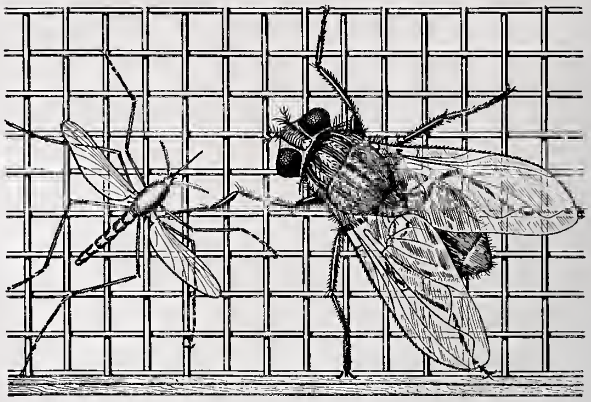

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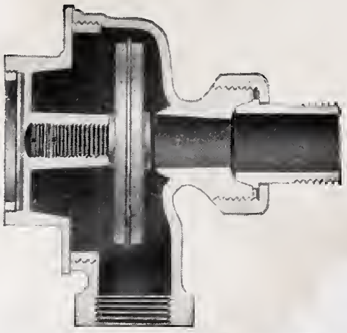

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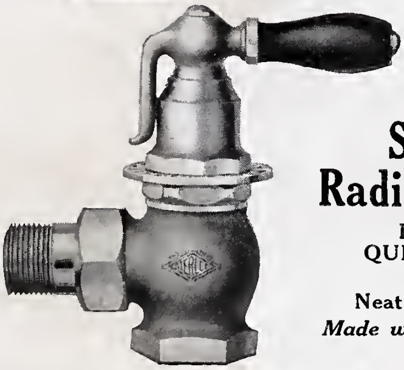

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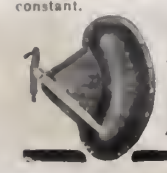

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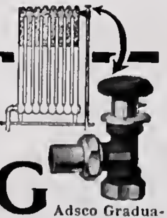

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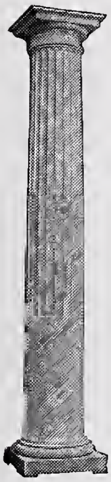

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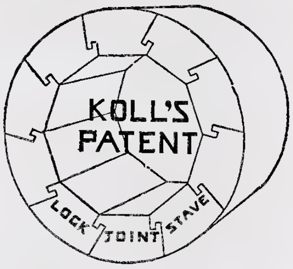

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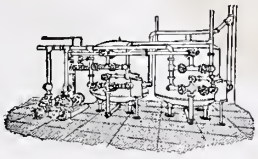

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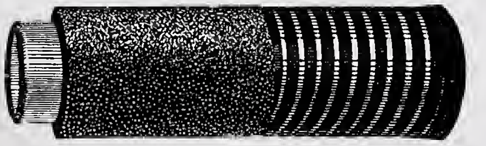

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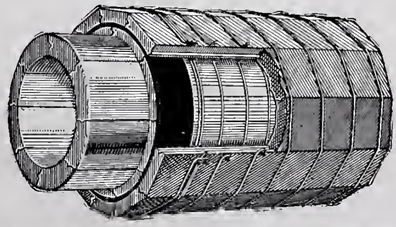

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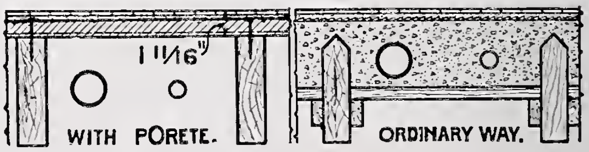

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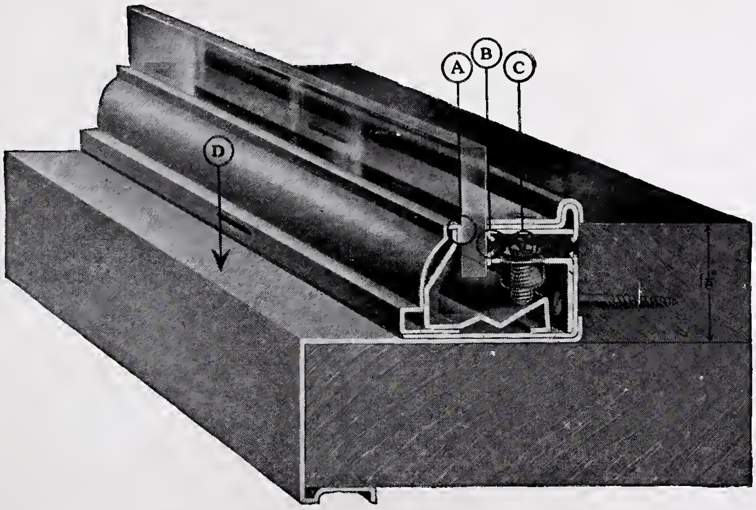

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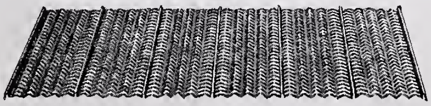

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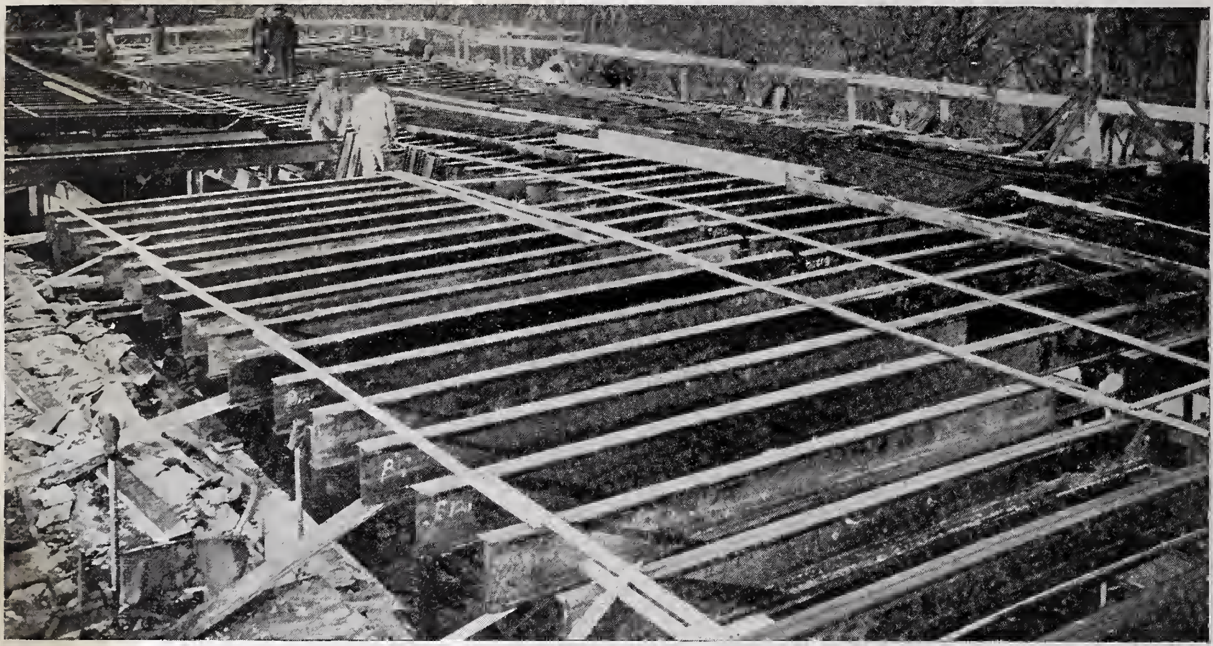

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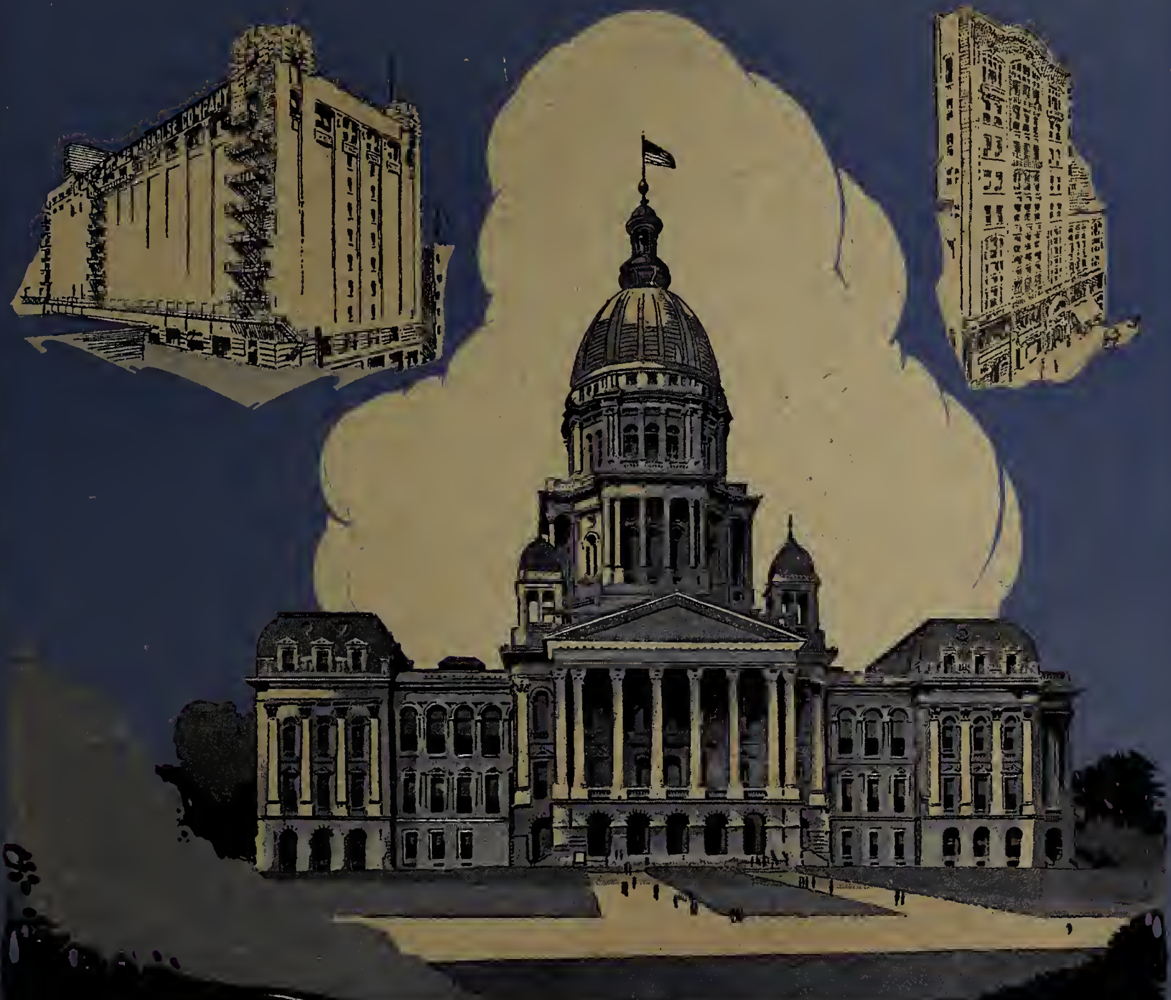

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